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**ORGAN DONATION AND TRANSPLANTATION:
A SURVEY OF CRITICAL CARE HEALTH PROFESSIONALS**

By

SUSAN MARIE CHERNENKO



A thesis submitted to the **Faculty of Graduate Studies and Research** in partial
fulfillment of the requirements for the degree of **Master of Nursing**.

Faculty of Nursing

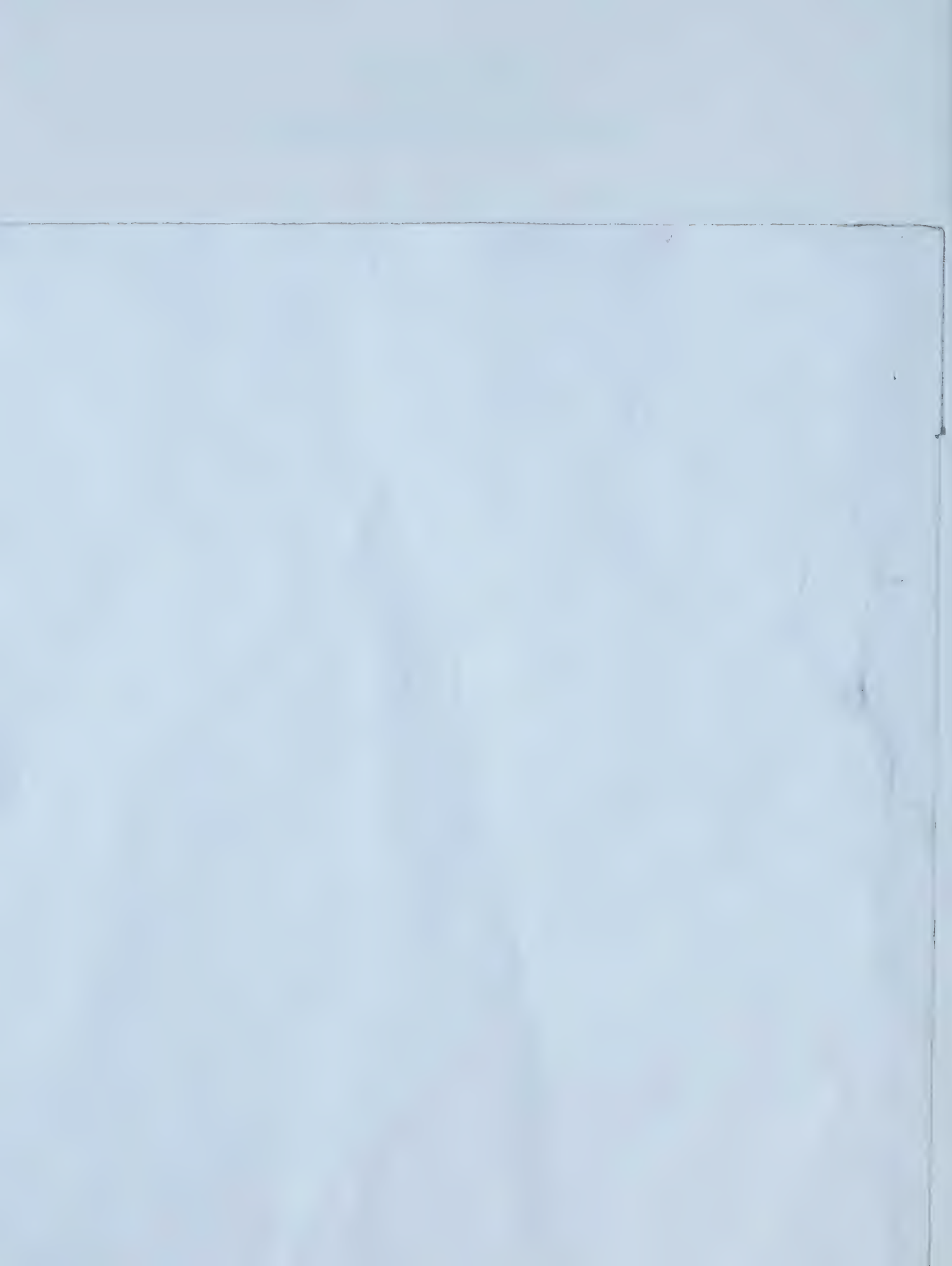
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Faculty of Graduate Studies and Research

The undersigned certify that they have read, and recommend to the Faculty of Graduate Studies and Research for acceptance, a thesis entitled **Organ Donation And Transplantation: A Survey Of Critical Care Health Professionals** submitted by Susan Marie Chernenko in partial fulfillment of the requirements for the degree of Master of Nursing.



DEDICATION

There is no truer gift than the gift of life, from one individual to another. This project is dedicated to those individuals and families who graciously offered this generous gift. Their thoughtfulness, at a time of intense grief, has allowed those suffering a life threatening illness a second opportunity of life.

The ease with which this project occurred is a testament to the support and encouragement provided by family and friends, most especially from my siblings and colleagues in the HOPE Program, University of Alberta Hospital.

ABSTRACT

Exploration of the role of critical care professionals in improving organ donation within Canada has been limited to tertiary care centers while donor potential in smaller non-transplant hospitals remains unknown. The purpose of this survey was to gain an understanding of the knowledge, attitudes, and barriers that health care professionals in five non-transplant centers in Alberta have towards organ donation and transplantation, and to identify factors that influenced participation in the donation process. Of the 135 survey respondents, 98 were critical care registered nurses, 32 were physicians, and 5 were hospital administrators. Respondents were least knowledgeable about transplant statistics and religious beliefs regarding donation, while overall, attitudes reflected positive support for organ donation. Respondents exhibited reluctance in approaching a potential donor family, and believed inadequate resources were allocated for organ donation. Educational programs are needed to increase knowledge of organ donation and transplantation.

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CHAPTER ONE

Introduction

Transplantation has become a viable option for the treatment of end stage/irreversible organ failure. As a result of advances in medical technology, surgical procedures and improved immunosuppression regimes, transplantation has resulted in positive economic benefits coupled with gains in survival and quality of life (O'Grady, 1997; Evans & Kitzmann, 1998; Anyanwu, McGuire, Rogers, & Murday, 2002). Kidney transplantation remains the most cost-effective method in treating end stage renal disease in comparison to renal dialysis (Karlberg & Nyberg, 1995). Lung transplantation also offers significant improvements in the patient's physical, social, and emotional health-related quality of life dimensions (Caine, Sharples, Dennis, Higenbottam, & Wallwork, 1996). Without solid organ transplantation, death remains a certainty, yet patients now look towards a positive future. Actuarial survival of patients receiving a heart transplant at one and five years is 82% and 70% respectively, with double lung recipients experiencing survival rates of 73% and 56% at one and four years post transplant. Liver transplant recipients experience a one and five year survival at first transplant of greater than 85% and 80%, with kidney transplant recipients surviving at 94% and 84% at one and five years (Canadian Organ Replacement Registry [CORR], Volume 2, 2000). With these measured successes, transplantation has proven to be the treatment for end-stage organ failure.

Due to the advances made in transplantation, the current shortage of organs does not meet the growing demands within our society. In Canada, the number of patients waiting for transplants (as expressed by per million population) has increased by 94%

from 1991 (CORR, Volume 2, 2000). In 1991, statistics from the Canadian Organ Replacement Registry showed 67.8 people per million population in Canada were waiting for transplants. In 1999, the number of people awaiting transplants increased to 115.9 people per million population (PMP). Canadian transplant statistics show that organ donation rates have remained static at 13.7 – 14.7 donors PMP since 1992 (CORR, Volume 2, 2000). These rates fall far short of the identified demands, deeply impacting life expectancy of potential recipients (Ettner, Youngstein, & Ames, 1988).

Attention towards ensuring public awareness and education concerning organ donation has increased over the last decade; however, despite these efforts, donation rates continue to remain static. Several reasons are given to account for these poor donation rates. These include a general lack of knowledge among health care professionals regarding the success of transplants (Wakeford & Stepney, 1989), a lack of knowledge of brain death and donor criteria (Nelson, Marymont, Durand, Reyes, & Davis, 1992), difficulty understanding and explaining brain death to families of potential donors (Matten, Sliepecevic, Sarvela, Lacey, Woehlke, Richardson, & Wright, 1991), an inability or uneasiness in approaching and obtaining consent from the family (Ettner et al., 1988), as well as multiple difficulties experienced in the donation process such as the time involved, the demand for intensive care unit (ICU) beds, and the emotional demands experienced by health care providers (Prottas & Batten, 1988).

The Canadian Government, notably the Parliamentary Standing Committee on Health (PSCH), recognizing the increased need for transplants and improved organ donation rates, developed recommendations in consultation with key organizations, stakeholders, and members of the public and officials from Health Canada. These

recommendations describe a comprehensive and accountable approach that requires support from all levels of government. The recommendations made by the Standing Committee not only include a comprehensive transplantation network, public education and awareness, xenotransplantation guidelines, and demand reduction, but also includes professional education (Health Canada, 1999). The recommendation for professional education includes professional training, curriculum, and standards for doctors, nurses, and other health professionals that are involved in this area. Surveys from the United States and Spain (both of whom have higher donation rates) suggested that lower donation rates may be in part due to health care professionals' discomfort in approaching grieving family members (Prottas & Batten, 1988; Stiller & Abbott, 1994; Molzahn, 1997). As a result, Health Canada, in recognition of the significant role health professionals play in organ donation, have focused on the needs and concerns of those professionals as one of many priorities.

At the provincial level, The Honorable Halvar Jonson, Minister of Health and Wellness developed the Alberta Advisory Committee on Organ and Tissue Donation and Transplantation (AACOTDT) in April 1999. The Committee's mission was to develop a framework for a coordinated and comprehensive provincial system of organ and tissue donation and transplantation. Linked with national initiatives and the Alberta Health and Wellness Business Plan, the strategies and recommendations supported the national plan and developed 99 recommendations designed to improve the existing provincial system for organ and tissue donation and transplantation (The Report of the Alberta Advisory Committee on Organ and Tissue Donation and Transplantation, 2000). Of the 99 recommendations, two key points were: 1) designation of donation and transplant

services expansion to include five centers outside of Edmonton and Calgary, and 2) critical care services in health regions throughout Alberta designated to provide support in the identification and care of organ donors, with coordination and management of the organ donor by critical care specialists (The Report of the Alberta Advisory Committee on Organ and Tissue Donation and Transplantation, 2000). These federal and provincial initiatives were developed in recognition that organ donation in Alberta remains largely inadequate. In fact, missed donation opportunities for families and benefits for potential recipients have been experienced within urban institutions in Edmonton and Calgary. Within the Capital Health Region alone, 53 potential donors were identified in 2000, whereas only 29 donors (55%) were actualized (Executive Summary Report, 2002). Twenty-four potential donations (45%) were not realized due to physician concerns of adding further distress to a grieving family, concerns regarding medical suitability, and the lack of performance of brain death criteria.

Health care professionals, particularly critical care personnel, have an opportunity to be key players in remedying the existing organ shortage, given their intimate responsibility for caring for patients who may potentially progress towards brain death. Through the initial identification of the potential donor, to maintenance and procurement of organs and tissues, critical care professionals can play a significant role in alleviating the current shortage of organs for transplantation.

The success rate for organ transplant recipients has resulted from physiologic advancements in transplantation, however this has greatly increased the distance between supply and demand of organs. Public awareness regarding the viability and successes of transplantation thus became necessary in order to meet these growing demands. Media-

driven campaigns occurred in the last decade focusing on successes experienced in transplantation, resulting in a positive outpouring of public support, but with little change in donation rates. An extensive survey conducted by the Gallup poll in 1983 showed that 92% of the American public was informed of organ donation, and 75% were willing to donate the organs of a loved one. In a nationwide survey (1985), Manninen and Evans found that of the 2000 American respondents, 94% had heard about transplantation, yet only half were willing to have their own organs or those of a family member donated after death and only 20% carried organ donor cards. More recently in 1995, an Angus Reid poll showed that 77% of Canadians were willing to donate their organs, with 58% having signed an organ donor card. Sixty-three percent had reported they had discussed the idea of organ donation with a family member. Despite support indicated for organ donation in the public surveys following media campaigns, donation rates have remained surprisingly unchanged at 11.6 PMP (1992) to 13.7 PMP (1998) (CORR, Volume 2, 2000). Redirecting the focus of research towards the role that health care professionals play in organ donation and transplantation is imperative (McGough & Chopek, 1990).

Purpose of the Study

The purpose of this study was to survey health care professionals' knowledge and attitudes toward organ donation and transplantation in five non-transplant centers in Alberta.

The specific questions that were addressed included the following:

- 1) What knowledge do health professionals in non-transplant centers in Alberta have of the incidence and success rates of organ transplantation?

- 2) What is the knowledge of health professionals in non-transplant centers in Alberta regarding the clinical criteria of brain death and donor criteria?
- 3) What are the attitudes of health professionals in non-transplant centers in Alberta towards organ donation and transplantation?
- 4) What are the perceived barriers of health professionals in non-transplant centers in Alberta in the process of organ donation?
- 5) What is the relationship between characteristics of health professionals in non-transplant centers in Alberta and their knowledge, attitudes, and perceived barriers towards organ donation and transplantation?

Definition Of Terms

Brain death: is the irreversible loss of the capacity for consciousness combined with the irreversible loss of all brainstem functions including the capacity to breathe (The Canadian Journal of Neurological Sciences, 1999).

- a) *Cessation of Brain Function*: The clinical absence of brain function is defined as profound coma, apnea, and the absence of brain-stem reflexes (The Canadian Journal of Neurological Sciences, 1999).
- b) *Irreversibility*: Cessation of brain function is determined to be irreversible when: the proximate cause of the coma is known and is capable of causing neuronal death; the loss of brain stem function is total and constant over time; reversible causes of brain dysfunction have been excluded. (The Canadian Journal of Neurological Sciences, 1999).

Clinical criteria for brain death:

No spontaneous movement (spinal reflexes may still exist in the presence of brain death and should not interfere with the process)

Unresponsive to deep, painful stimuli

Absent brain stem reflexes

Unreactive pupils

Absent corneal reflexes

Absent doll's-head phenomena (oculocephalic)

Absent oropharyngeal reflex

Absent oculovestibular response

Absent respiratory reflexes

Absence of spontaneous respirations in the presence of a PaCO_2 of 60 mmHg or higher

Absence of:

Central nervous system depressant drugs

Hypothermia ($<32.2^\circ\text{C}$.)

Hypoxia

Metabolic and endocrine disturbances

Shock

Neuromuscular blockade

(Presidential Commission, 1981; Ad Hoc Committee of the Harvard Medical School, 1968, 1984).

Donor: A potential organ donor case where brain death is declared, legal consent is obtained for organ donation, and at least one vascularized solid organ is recovered for the purpose of transplantation (Joint Commission Journal on Quality Improvement. 1997).

Transplantation: refers to the implantation of a donor organ into a recipient for the purposes of treating patients in end-stage organ failure (Prottas, 1994).

Significance of the Study

Critical care health professionals are the critical link between potential donors and actual donations; therefore, their role is not to be underestimated. Improved understanding of physicians' and nurses' beliefs about transplant issues, their attitudes and concerns regarding requesting donation, and their experiences in the potential donor situation could be utilized in creating effective education and training programs which would subsequently impact the current rates of organ donation.

CHAPTER TWO

Review Of The Literature

Knowledge of Organ Donation and Transplantation

The most significant barrier to obtaining organs and tissues for transplantation resides in the lack of active participation of critical care professionals in the referral of potential donors (Borozny, 1988; Stoeckle, 1990). In a study of health professionals (physicians, nurses, hospital administrators) in 176 U.S. transplant centers (n=545), medical professionals did not have accurate knowledge of the scope or impact of transplantation, thereby reducing their awareness of the incidence and success rates experienced in this field (Ettner et al., 1988). While fifty-eight percent of these healthcare professionals correctly estimated the number of patients waiting for a kidney transplant, only 20% correctly estimated the success rate of heart transplants. Current five-year actuarial survival following cardiac transplantation resides at slightly greater than 70% in Canada, which is consistent with data from the International Society for Heart and Lung Transplantation Registry (CORR, Volume 2, 2000). The waiting list for kidney transplants has tripled since 1997. Of all the patients waiting for a transplant, 81% are waiting for a cadaveric kidney transplant (CORR, Volume 2, 2000). However, despite the lack of knowledge of current transplant statistics and successes, donation and transplantation were seen as a viable option for end stage organ failure and were highly supported (Ettner et al., 1988).

It has been suggested that if health professionals were current on transplant statistics and waiting lists, it might follow they would be more apt to become active in the procurement process as well as maintaining the potential organ donor by appropriate care

practices (Ettner et al., 1988). Transplant recipient outcomes show an average survival of 73% to 94% at one and five years respectively for all organs (CORR, Volume 2, 2000). As of December 31, 1998, 12,000 patients with a functioning graft were being followed in Canada (CORR, Volume 2, 2000). Of those patients, 2,000 were liver recipients, 1,400 heart recipients and 9,000 were kidney recipients. This represents the survival of 66% of all liver transplants, 66% of all heart transplants and 49% of all kidneys transplanted in Canada to the end of 1998 (CORR, Volume 2, 2000).

In spite of identified support for organ donation by health care professionals, many medical and nursing personnel remain unaware or unsure of their hospital policies regarding organ donation and transplantation (Ettner, et al., 1988). Sophie, Salloway, Sorock, Volek, and Merkel (1983) found that 25% of the critical care nurses surveyed (n=312) were unaware of their hospital's policies regarding organ procurement. Brain death and prolonged life support can create conflictual feelings amongst staff members, particularly if well-established, clearly defined written protocols have not been established (Evanisko, Beasley, Brigham, Capossela, Cosgrove, Light, Mellor, Poretsky, & McNamara, 1998). Discordant feelings amongst critical care staff unfamiliar with or unaware of institutional policies may deter them from initiating or identifying potential organ donors (Sophie et al., 1983).

Knowledge of Brain Death and Donor Criteria

Health care professionals' knowledge regarding brain death is one of several key factors that impacts organ retrieval rates, yet a number of studies have shown that many nurses and, to a lesser degree physicians, were unable to diagnose brain death accurately and consistently (Sophie et al., 1983; Youngner et al., 1989; Bidigare & Oermann, 1991).

Studies have shown health care professionals remain uncertain regarding the definition of brain death. In a survey by Ettner et al. (1988) of health care professionals including physicians, nurses, hospital administrators and staff in 176 U.S. transplant centers (n=545), it was found that 83% of the respondents were aware of established guidelines for brain death and organ recovery, yet 30 % indicated that hearts, livers, and kidneys can be recovered after the donor's heart has ceased beating. Within this same study, 24% reported that they were hesitant about whether a brain dead patient is truly dead until the heart stops beating. This confusion may be due to the aggressive resuscitative measures instituted; the brain-dead patient appears 'alive' and the brain dead donor is given full surgical services (Ettner, 1988).

A study of 60 critical care nurses at a Midwestern American hospital, found low levels of knowledge (33%) about organ procurement which included donor criteria, brain death criteria, donor maintenance, and transplantation (Bidigare & Oermann, 1991). Despite the lack of accurate knowledge regarding organ procurement and transplantation, 86% of the nurses approved of organ donation and 80% indicated they would want to be donors themselves.

Nurses have consistently demonstrated a decreased level of understanding of brain death when compared to physicians (Youngner, Landefeld, Coulton, Juknialis, & Leary, 1989). In a survey of 195 critical care physicians and nurses likely to be involved in organ procurement from four university-affiliated hospitals with organ transplant programs (in Cleveland, Ohio), only 53% of the nurses correctly answered the question about whole-brain criterion of death as compared to 85% of physicians. Nursing staff described reservations and ambivalence towards the diagnosis of brain death, viewing the

patient as appearing similar to other patients within the ICU, reminding them of patients who may recover from their illnesses (Youngner et al., 1989). This reservation and ambivalence may increase due to the nurses' close interaction with grieving family members who are less prepared to accept the diagnosis of death in the face of their heart beating brain dead family member (Youngner et al., 1989). This ambivalence may then be conveyed to the family, producing an unsupportive response towards organ donation, a decision the family members may ultimately regret (Sophie et al., 1983). Despite the identified support for organ donation, brain death remains a challenging issue for critical care professionals.

Nurses in the critical care units are among one of the first health care providers to identify a potential organ donor, therefore, awareness of brain death and donor criteria is essential. Sophie et al. (1983) reported that 63% of ICU nurses believed they were the first to identify potential donors while they perceived the physician identified only 31%. Furthermore, they found that 65.7% of nurses had the skill to accurately identify suitable donors, although in more complex or ambiguous cases, they were only able to identify 20.7%. In a Canadian survey of 76 intensive care nurses, it was found that knowledge of brain death and donor criteria was limited in that less than half of the respondents listed apnea or unresponsiveness as criteria for a diagnosis of brain death (Borozny, 1988). The majority of intensive care nurses correctly noted that the absence of brain stem reflexes was a criterion; however, there was discrepancy in which reflexes were included, with only one nurse indicating all brain stem reflexes must be absent.

Attitudes Towards Organ Donation

Of the many organ procurement focused studies performed in the last ten years, professional attitudes toward organ donation and transplantation have shown overwhelmingly positive support. A survey of medical professionals ($n = 545$) consisting of physicians, nurses, hospital administrators, and staff in 176 U.S. transplant centers, found that 80% of respondents supported organ donation, 69% intended to donate their organs in the event of brain death, and 74% supported donating the organs of a deceased family member (Ettner et al., 1988). With this optimistic support, 47% of the respondents in this study had, in fact, signed their donor card (Ettner et al., 1988).

In a survey by Prottas and Battens (1988), it was found that intensive care nurses ($n = 1105$) were more willing to recognize patients as potential donors if they perceived physician and hospital administrative support for organ donation and transplantation. This same study indicated that half of the critical care nurses felt that brain death criteria was not well established. Prottas and Battens' (1988) survey of nurses, directors of nursing, hospital administrators and neurosurgeons found that virtually all of these groups universally supported organ donation, would donate their own organs, and would consider donating the organs of loved ones. With this overwhelming support, the question begs answering, "Wherein lies the problem of our continued poor donation rates?"

Barriers To Organ Donation

Both physicians and nurses view organ procurement as a professional responsibility (Kiberd & Kiberd, 1992); yet, barriers continue to exist that preclude the ease with which this event occurs. Barriers to obtaining organs for transplantation strongly relate to physicians' and critical care nurses' discomfort in approaching families

for donation. Kennedy, Farrand, Decatur, and Urbana (1996) studied the attitudes of emergency room nurses ($n = 109$) to organ and tissue donation in 17 hospitals in Illinois, U.S. Their results indicated that nurses' attitudes about organ donation were strongly related to their confidence in asking families about donation. This lack of confidence and decreased comfort level in approaching family members were a result of perceived lack of ability to request organ donation. This perception produced a lack in confidence, which reduced the frequency with which they approached potential donor families. The nurse's confidence in his or her ability to ask a family about donation correlated with the number of times the nurse approached a potential donor family.

Lack of training in how to approach relatives of brain dead patients is cited as contributing to the uneasiness of many critical care professionals (Wakeford & Stepney, 1989). This lack of training and discomfort in approaching families may result in professionals attempting to avoid the task or produce a hesitant approach, which is then conveyed to the grieving family (Wakeford & Stepney, 1989; Molzahn, 1997). This hesitant manner may imply non-support of organ donation and, as such, result in refusal. The majority of requesters in the critical care setting are untrained, inexperienced and ill prepared when faced with this challenging situation (Sophie et al., 1983; Molzahn, 1997).

Effective request processes show key elements of clear communication of brain death to the family, introducing the topic of organ donation following the family's acceptance of death (decoupling), making the request in a quiet and private setting, and designating roles of hospital staff and the OPO coordinator clearly (Evanisko et al., 1998; Gortmaker, Beasley, Sheehy, Lucas, Brigham, Grenvik, et al., 1998). The decoupling component has been shown to produce significantly higher rates of consent compared to

when decoupling did not occur (Gortmaker et al., 1998). Despite the strong emotional experience for both health care provider and potential donor family, nurses believed the decision to donate assists grieving families make sense out of the tragedy, assisting them through the grieving process (Stoeckle, 1990). Donor families look for meaning in their grief, welcoming organ donation as an act of consolation that ultimately helps diminish their feelings of loss (Kozlowski, 1988; Pelletier, 1992).

Health care professionals are challenged with the daunting task of approaching a family faced with a devastating loss, and then offering them the option of organ donation. Health care providers, whether physicians or critical care nurses, perceive this as adding to the heightened distress of an already devastated family (Sophie et al., 1983; Borozny, 1988; Molzahn, 1996; Wakeford & Stepney, 1989). This reluctance to initiate donation in the face of such a stressful period for the family is cited as one of the key factors underlying poor rates of donation (Wakeford & Stepney, 1989).

Coupled with the discomfort in approaching grieving families, donation has been cited as an emotionally exhausting experience for critical care professionals. Sophie et al. (1983), found that 21% of the ICU nurse respondents found participation in donor care to be emotionally draining due to aggressive measures undertaken towards the preservation of organs, not the person. A high emotional toll occurred for 77% of critical care staff involved in the care of a family from whom they wish to obtain organ and tissue donation; however, 86% of those professionals studied indicated they would volunteer to provide the necessary emotional support in order to facilitate the donation process (Hickey & Lewandowski, 1988). ICU nurses' major concerns included the lack of personnel to provide the aggressive care required, and educational and psychological

support for family members when the donor is transferred to the operating theatre for organ retrieval.

Nurses with prior donation experience were found to be more knowledgeable and have a positive professional view of the donation process (Prottas & Batten, 1988; Bidigare & Oermann, 1991). Having previous experience with organ donation and transplantation could impact donation rates significantly as the positive attitudes may influence the family's decision to consent to organ donation (Youngner et al., 1989). In an Ontario study of 102 hospitals with an ICU, 85-95% of the respondents reported a general lack of familiarity with the organ donation process (Robinette, Stiller, & Marshall, 1986). This lack of awareness of the donation process in non-transplant hospitals was stated to be a significant barrier to the identification of potential donors. Some institutions may not be aware of how to initiate the donor process and may even be unfamiliar with the local organ procurement organization (Molzahn, 1996).

Further barriers to organ donation relate to the staff's resentment of the time, effort, and expense involved in the care of an organ donor (Wakeford & Stepney, 1989). In the setting of a non-transplant centre and/or a smaller critical care unit, this event is not an everyday occurrence, requires an intense amount of care that is aggressive in nature, prolonging the patient's demise and family's grief. Physicians in institutions without a transplant unit expressed concerns regarding financial and legal issues, as the donation process added to their ICU budget, and lack of remuneration occurred to those physicians involved in the donation process. Robinette, Stiller, and Marshall (1986) found that 70% of physician respondents expressed concern about their legal liability in the organ procurement process. Other studies indicated the process of organ recovery was

logistically complex, adding to the stress and emotional burden for the family and staff (Kiberd & Kiberd, 1992; Vernale, 1991). Streamlined procedures need to be developed within institutions in order to manage the complexity of multiple organ donations (Molzahn, 1997).

Staff in critical care areas of non-transplant centers experience additional distress over having to be constantly aware of the need to identify a potential donor (Skelley, 1985). This is particularly difficult when it yields no tangible results for the staff or institution in the form of care of the post-transplant recipient. This then may not be a priority for the majority of professionals in this kind of setting (Skelley, 1985; Adams, Just, De Young, & Temmler, 1993). Lacking institutional support and direct contact with patients waiting for or successfully recovering from a transplant, health care providers in non-transplant centers are not externally reinforced for their efforts. Their efforts, therefore, must be internally motivated by humanitarian ideals (Skelley, 1985).

Non-transplant centers may have professionals with reduced knowledge levels about brain death and donor criteria coupled with infrequent organ donors yielding fewer efforts for the pursuit of organ donation. Once a donor is identified, referral to an organ procurement organization (OPO) occurs. The OPO requests aggressive interventions until the team arrives for surgical retrieval. Critical care staff may find the management of the organ donor stressful, as they fear making an error in clinical judgment, thus causing potential harm to the organs and the potential recipients (Sophie et al., 1983). The aggressive care required of this infrequent occurrence can create stress for the ICU staff, as they may perceive it detracts from the care of other viable patients, patients who may survive their illness (Bidigare & Oermann, 1991). The study by Kiberd and Kiberd

(1992) showed that the stress associated with the care of the organ donor is also attributed to the time spent maintaining the donor, and the nurses' inability to provide the necessary comfort for the devastated family. The study respondents ($n=102$), particularly the ICU nurses, indicated that other stressors were experienced, such as the perceived inexperience of the medical staff and lack of clear hospital donor protocols within the unit, ultimately reduced the staff's willingness to identify potential donors. Wakeford and Stepney (1989), in a survey focusing on obstacles to organ donation in Cambridge, United Kingdom, found that dealings with transplant teams produced negative attitudes from nurses. Fifteen percent of respondents from teaching hospitals felt adverse experiences with members of transplant teams definitely restricted organ recoveries in their units. Furthermore, Borozny (1990) showed from her phenomenological study of eleven intensive care nurses from Vancouver, British Columbia, that provided care to brain dead patients, viewed transplant teams as 'vultures standing there waiting' or viewed the donor in terms of a 'potassium of 3.4' versus 'Mr. Jones who has a potassium of 3.4'. These findings would suggest that OPO personnel must remain cognizant of personal and procedural styles that effectively and positively facilitate the organ retrieval process.

Summary

The current rate of organ donation in Canada (13.7 PMP) continues to challenge health care providers as they strive towards resolution of this complex issue. In comparison to Spain, which experiences donation rates of 32 PMP, Canadian donation rates have remained static over the last decade. Regional variations exist across the provinces with Alberta placing second at 16.7 PMP (CORR, 2000). Improved donation

rates have been attributed to full time in-hospital donation specialists and routine referral (Shafer, Durand, Hueneker, Wolff, Davis, Ehrle, Buren, Orlowski, Reyes, Gruenenfelder, & White, 1998). Further studies reviewed suggested that critical care professionals' reluctance to initiate donation, rather than the refusal of relatives, is one of the key factors underlying poor donation rates (Stiller & Abbott, 1994). This reluctance is multi-factorial, and includes decreased knowledge of health professionals regarding donation rates and the success of transplantation; uncertainty surrounding the definition of brain death and reservations about the diagnosis of brain death; unfamiliarity with brain death criteria; discomfort and lack of training in how to approach families for donation; and the high emotional toll experienced by critical care professionals when assisting families through the tragedy, coupled with aggressively caring for the brain dead person (Stoeckle, 1990; Youngner et al., 1989). Other factors contributing to health care providers' reluctance to initiate donation are resentment of the time, effort, and expense involved in the care of a brain dead patient, particularly for non-transplant hospital personnel; financial and legal concerns regarding the donation experience; and, finally, the additional pressure felt by staff in non-transplant centers to be constantly aware of the need to identify potential donors (Skelley, 1985; Vernale, 1991). With identification of areas of concern for health care providers, effective interventions may be implemented in order to alleviate the trepidation experienced by critical care professionals when faced with a brain dead patient.

To date, there have been few studies focusing specifically on non-transplant centers in the United States, with the majority of studies driven from major transplant institutions. Information obtained from non-transplant centers has been anecdotal at best,

with little focus on donor potential in primary non-transplant centers (Klassen, Klassen, Aronoff, Hall, & Braslow, 1999; Frezza, Krefski, & Valenziano, 1999). Virtually no studies have focused on non-transplant centers in Canada. With the new provincial framework for designated intensive care units in non-transplant centers across Alberta, caregivers in these centers will be faced with the task of identifying and supporting potential donors and providing comfort and support to their grieving families.

Understanding concerns and identifying barriers for these critical care specialists and centre administrators will be imperative in order to support future donor potential.

CHAPTER THREE

Method

The purpose of this study was to survey health care professionals' knowledge and attitudes toward organ donation and transplantation in five non-transplant centers in Alberta. The specific questions that were addressed included the following:

- 1) What knowledge did health professionals in non-transplant centers in Alberta have of the incidence and success rates of organ transplantation?
- 2) What was the knowledge of health professionals in non-transplant centers in Alberta regarding the clinical criteria of brain death and donor criteria?
- 3) What were the attitudes of health professionals in non-transplant centers in Alberta towards organ donation and transplantation?
- 4) What were the perceived barriers of health professionals in non-transplant centers in Alberta in the process of organ donation?
- 5) What was the relationship between characteristics of health professionals in non-transplant centers in Alberta and their knowledge, attitudes, and perceived barriers towards organ donation and transplantation?

Design

The design for this study was a descriptive survey. The data were gathered from critical care professionals and administrators in five non-transplant centers in Alberta who were most likely involved in the care of hospitalized, potentially brain dead patients and their families and/or involved in the organ retrieval process.

Sample

The population targeted for this study was emergency department and critical care physicians and registered nurses, as well as hospital administrators in five non-transplant centers in Alberta. These centers included Fort McMurray, Grande Prairie, Red Deer, Medicine Hat and Lethbridge. These centers receive the trauma/cerebral events from smaller outlying communities, therefore were targeted for inclusion into the study. The respondents included staff nurses, charge nurses, clinical nurse specialists or supervisors, emergency room and intensive care unit registered nurses, emergency and intensive care physicians, and hospital administrators. Exclusionary criteria was health care providers not working in critical care areas, urban health care institutions, transplant institutions and small rural hospitals that refer patients with severe head injuries or head insults to more acute care institutions.

The size of the population surveyed was 336; 211 Registered Nurses identified from the Alberta Association of Registered Nurses (AARN), 109 physicians working in the emergency department or intensive care units, and 16 hospital administrators from the five non-transplant centers in Alberta.

Data Collection Procedures

Data collection occurred through a mailed questionnaire in a self-addressed stamped return envelope. The AARN mailed out the questionnaire to the Registered Nurses. Each non-transplant center's hospital administrative assistant provided the mailing addresses for each physician who received the questionnaire. A cover letter (Appendix A) introducing the purpose of the study was sent with each questionnaire (Appendix B) inviting critical care professionals from the five non-transplant centers in

Alberta to participate. The respondents were requested to return the completed questionnaire within two weeks. To increase the response rate, all participants received a reminder card after two weeks asking them to call for another questionnaire if the first one was lost or misplaced or to thank them for participating (Appendix C). The surveys were color coded and coded with a symbol depicting the transplant center and whether the respondent was a registered nurse, physician or hospital administrator.

Survey Questionnaire

The questionnaire used was the modified ‘Organ Donation and Transplantation: A Survey of Critical Care Health Professionals’ (Molzahn, 1996) (Appendix B). The original questionnaire was developed from previous surveys by Prottas and Batten (1988) and Ettner et al. (1988). Reliability and validity of the tool has been previously established by Molzahn (1996). The Cronbach’s alpha coefficient was 0.73 for the attitude subscale, 0.72 for the personal commitment subscale, 0.70 for the professional involvement subscale, and 0.53 for the knowledge subscale. Low internal consistency of the knowledge subscale was felt to be the result of different areas of knowledge about organ donation and transplantation.

Five demographic questions were added from a survey developed by Matten (1988). The original questionnaire was then modified for this study by adding four sections: Section I - knowledge related to organ donation and transplantation: Section II - attitudes toward organ donation and transplantation; Section III - willingness to facilitate the organ donation process coupled with experience with organ donation; and Section IV – perceptions of resources for the organ donation process; and Section V - demographic characteristics of the respondents. A three-point Likert scale was used to solicit

knowledge and perceptions of resources, a five-point Likert scale for attitudes, personal commitment and professional involvement, and a fill in the blank format to solicit demographic information.

Next a panel of six experts reviewed face validity and content validity of the modified questionnaire: two organ donor coordinators, one transplant clinical nurse educator, one recipient transplant coordinator, and two transplant physicians. All individuals were knowledgeable about the organ donation and referral process. The instrument was reviewed for appropriateness, clarity, and adequacy of response options, completeness, readability, and directions. Minor editorial changes were made to several items to clarify meaning, and to improve their readability and clarity. No additional questions were suggested for inclusion.

Data Analysis

Questionnaire items were analyzed using descriptive statistics such as modes, medians, range, standard deviation, and percentages. To examine relationships among characteristics of health care professionals' knowledge, attitudes, and barriers, Pearson's correlation coefficients or Chi-square analyses were conducted. Furthermore, differences among responses from non-transplant centers and health care professionals were assessed using Chi-square analyses. Reliability of the 'Organ Donation and Transplantation: A Survey of Critical Care Health Professionals' questionnaire subscales (Section I - knowledge relating to organ donation and transplantation; Section II - attitudes toward organ donation and transplantation; Section III - willingness to facilitate the organ donation process coupled with experience with organ donation; Section IV – perceptions

of resources for the organ donation process; and Section V - demographic characteristics of the respondents, was assessed using Cronbach's alpha coefficient.

Ethical Considerations

Ethical approval was obtained from the Health Research Ethics Board, Capital Health Region. Each survey included a cover letter outlining the purpose of the study and directions for completing the questionnaire. The cover letter contained a statement regarding the voluntary nature of participation, assurances for anonymity of responses and individual's right to refuse to participate. A returned survey indicated consent. All surveys were color coded to identify the health care professional as to physician, nurse or hospital administrator without the use of respondent's names.

CHAPTER FOUR

Findings

The purpose of this descriptive survey was to gain an understanding of the knowledge and attitudes of critical care health professionals on organ donation and transplantation in five non-transplant centers in Alberta. A survey was conducted using the 'Organ Donation and Transplantation: A Survey of Critical Care Health Professionals' (Molzahn, 1996) (Appendix B) regarding knowledge of the incidence and success rates experienced in organ transplantation, clinical criteria of brain death and donor criteria, attitudes towards organ donation and transplantation, perceived barriers towards donation and transplantation and relationships between characteristics of health professionals in non-transplant centers in Alberta towards their knowledge, attitudes and perceived barriers towards organ donation and transplantation.

Responses were analyzed using the Statistical Package for Social Sciences (Version 9.0) software program. Frequencies were obtained for demographic information, responses to knowledge, attitudes, personal involvement and resource questions. Chi-square analysis was performed to assess differences among responses of health care professionals in non-transplant centers regarding knowledge, attitudes, personal involvement, and resource information in relation to factors such as respondent age, health care professional, years of clinical experience, practice area, and health region. Reliability estimates were performed on each subscale of the questionnaire. Cronbach's alpha coefficient for the knowledge subscale was .55, for the attitude subscale was .61, for the personal involvement subscale was .56, and for the resource subscale was .43. Total questionnaire reliability by Cronbach's alpha was .78.

Characteristics of the Respondents

A total of 336 questionnaires were mailed to five non-transplant centers in Alberta. Of this total, 211 surveys were sent to registered nurses, 109 surveys to physicians, and 16 surveys to hospital administrators. One hundred and thirty-five surveys were returned, providing a response rate of 40.2 percent. Of the 135 respondents, 98 were from registered nurses (72.6%), 32 were from physicians (23.7%) and 5 were from hospital administrators (3.7%) (see Figure 1). This represents a response rate of 46% (98/211) for registered nurses, 29% (32/109) for physicians, and 31% (5/16) for hospital administrators.

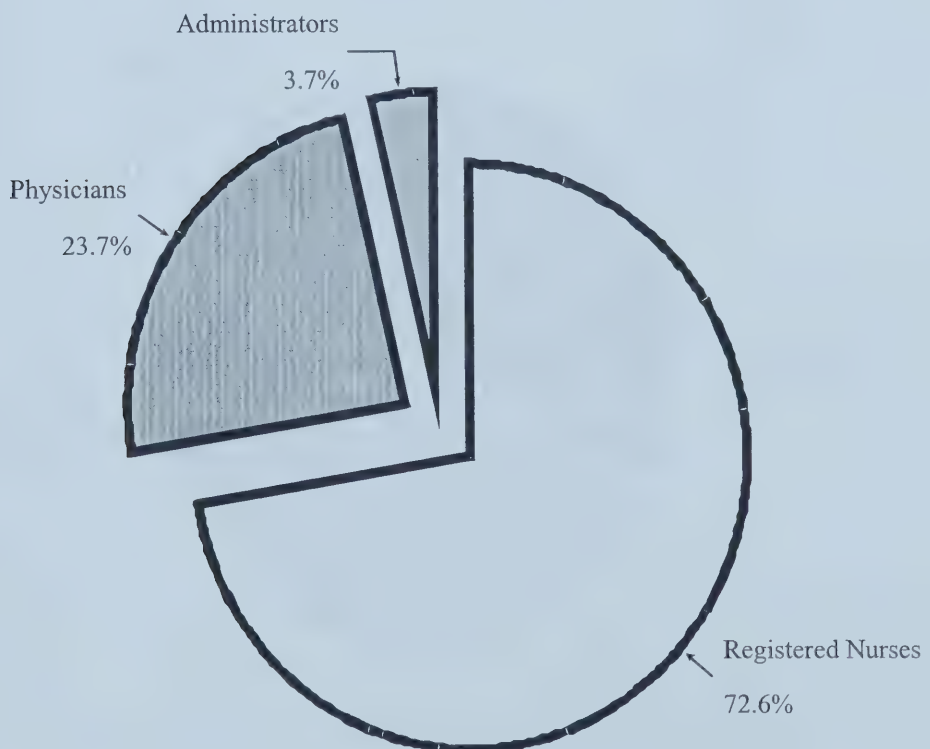


Figure 1. Categories of Critical Care Health Professionals

Seventy-five percent of the total respondents were female ($\underline{n} = 134$), 52.2% had between 15 and 29 years in practice ($\underline{n} = 70$), 49% were diploma prepared ($\underline{n} = 65$) and 90% were currently working as staff practitioners ($\underline{n} = 132$). Equal distribution of respondents occurred between practice areas of Emergency at 40.8% ($\underline{n} = 130$) and ICU/CCU at 43.1% ($\underline{n} = 130$). As well, age of respondents was equally distributed at 47.4% between 26-39 years ($\underline{n} = 133$) and 49.6% between 40-53 years ($\underline{n} = 133$). Health region distribution was also similar, with Grande Prairie response rate at 22.2% ($\underline{n} = 30$), Red Deer at 25.9% ($\underline{n} = 35$), and Lethbridge at 24.4% ($\underline{n} = 33$). Fort MacMurray and Medicine Hat had lower response rates at 11.1% ($\underline{n} = 15$) and 16.3% ($\underline{n} = 22$), respectively ($\underline{n} = 135$) (see Figure 2).

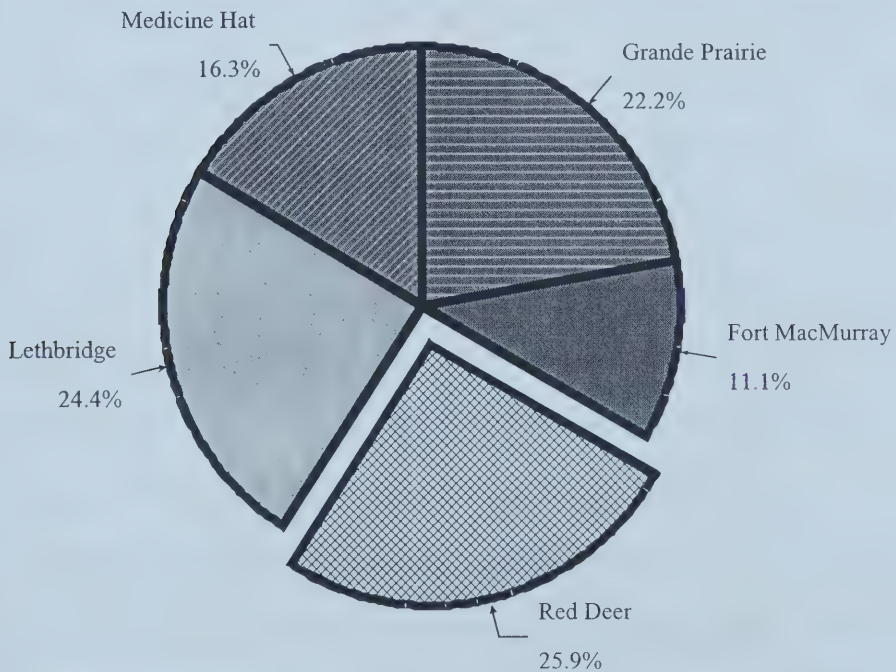


Figure 2. Health Care Region of Critical Care Health Professionals.

The majority of registered nurse respondents were female (90.7%), diploma prepared (64.9%), between 40 and 53 years of age (51%), with mean practice years between 15 and 29 years (58.8%). The physician respondents were predominantly male (75%), between 26 and 39 years of age (50%), mean number of years in practice between 1 and 14 years (65.6%), with postgraduate education (54.8%) (Table 1). The administrators paralleled the registered nurse respondents in mean age, gender, and number of years in practice. Primary practice area showed registered nurse respondents worked predominantly in the Intensive Care/Coronary Care Units (55.2%); physician respondents worked predominantly in either the Emergency Department (46.7%) or other areas (46.7%) (Family Practice, Internal Medicine). No statistically significant differences were found between total respondents in regards to age and health region; however, a statistically significant difference was found between total respondents and gender, number of years in practice, practice area, and highest degree obtained. Of the total respondents, registered nurses (90.7%) and administrators (80%) were predominantly female, while physicians were predominantly male (75%) ($\chi^2 = 54.97$, $p = .000$). In relation to years of practice, a statistically significant difference was found with registered nurses and administrators having worked predominantly 15 to 29 years at 58.8% and 80%, respectively, while physicians had been in clinical practice between 1 and 14 years at 65.6% ($\chi^2 = 14.28$, $p = .006$). The highest degree obtained for each category of professional showed a statistically significant difference, with registered nurses typically diploma prepared (64.9%), physicians with a post graduate education (54.8%), and administrators divided between diploma and a baccalaureate education (40%) ($\chi^2 = 116.25$, $p = .000$).

Table 1

Characteristics of Health Care Respondents

Item	Nurses	Percent (%)	Physicians	Percent (%)	Administrators	Percent (%)	p
Mean Age	<u>N</u> = 96		<u>N</u> = 32		<u>N</u> = 5		
26 – 39 years	46	47.9	16	50.0	1	20.0	.090
40 – 53 years	49	51.0	13	40.6	4	80.0	
54 – 67 years	1	1.0	3	9.4			
Gender	<u>N</u> = 97		<u>N</u> = 32		<u>N</u> = 5		
Male	9	9.3	24	75.0	1	20.0	.000*
Female	88	90.7	8	25.0	4	80.0	
Mean number of years practicing	<u>N</u> = 97		<u>N</u> = 32		<u>N</u> = 5		
1 – 14 years	36	37.1	21	65.6			.006*
15 – 29 years	57	58.8	9	28.1	4	80.0	
30 – 44 years	4	4.1	2	6.3	1	20.0	
Primary area of practice	<u>N</u> = 96		<u>N</u> = 30		<u>N</u> = 4		
Emergency	38	39.6	14	46.7	1	25.0	.000*
ICU/CCU	53	55.2	2	6.7	1	25.0	
Other	5	5.2	14	46.7	3	50.0	
Highest degree obtained	<u>N</u> = 97		<u>N</u> = 31		<u>N</u> = 5		
Diploma	63	64.9			2	40.0	.000*
Baccalaureate	32	33.0	1	3.2	2	40.0	
Post Graduate	1	1.0	17	54.8			
Masters	1	1.0	2	6.5			
Other			11	35.5	1	20.0	
Health Region	<u>N</u> = 98		<u>N</u> = 32		<u>N</u> = 5		
Grande Prairie	17	17.3	13	40.6			.084
Fort MacMurray	13	13.3	1	3.1	1	20.0	
Red Deer	25	25.5	9	28.1	1	20.0	
Lethbridge	25	25.5	7	21.9	1	20.0	
Medicine Hat	18	18.4	2	6.3	2	40.0	

Note. * = $p \leq .05$

Knowledge of Organ Donation and Transplantation

Knowledge of organ donation and transplantation was obtained by requesting subjects answer 13 items of the questionnaire 'Organ Donation and Transplantation: A Survey of Critical Care Health Professionals' using an agree/disagree/unsure scale and another 4 items related to survival statistics and waiting lists scored as correct/incorrect (refer to Tables 2 to 5).

Sixty-three of the total respondents (47.4%) believed their hospital had written policies on organ donation, while 44.4% ($n = 135$) were uncertain. There was a statistically significant difference among health care professionals with 58% ($n = 98$) of registered nurses and 60% ($n = 5$) of hospital administrators agreeing their hospital had written policies on donation, while 75% ($n = 32$) of physicians were uncertain ($\chi^2 = 23.66$, $p = .000$). Fifty-four of the total respondents (40%) believed that many religions prohibit donation, while 39 (28.9%) respondents disagreed and 42 (31.1%) respondents were uncertain. Forty-three (43.9%) of the registered nurse respondents agreed that many religions prohibit donation, 17 (53.1%) of the physicians disagreed, and 3 (60%) of the administrators were unsure ($\chi^2 = 13.97$, $p = .007$).

Ninety of the total respondents (67.2%) agreed that clinical guidelines declaring brain death were well established. Sixty-five percent ($n = 98$) of registered nurse respondents, 71.9% ($n = 32$) of physician respondents, and 80% of administrators agreed clinical guidelines declaring brain death were well established. Seventy-five (55.6%) of the total respondents believed that laws recognize brain death as legal criteria for death, which parallel those of registered nurses at 56.1% ($n = 98$) and physicians at 59.4%

($n = 32$). Hospital administrators, however, showed an 80% ($n = 5$) uncertainty regarding laws recognizing brain death as legal criteria for death. However, these differences were not statistically significant.

Eighty-one percent ($n = 135$) of total respondents recognized that donors are brain dead patients on respirators, which paralleled registered nurse respondents at 81.6% ($n = 98$), physicians at 78.1% ($n = 32$), and administrators at 80% ($n = 5$). Sixty-two percent ($n = 134$) of respondents agreed that organ procurement does not follow asystole. Sixty (61.2%) registered nurse respondents and 22 (68.8%) physician respondents agreed that organ procurement does not follow asystole, while 60% ($n = 5$) of administrators stated otherwise. Fifty-seven percent of respondents agreed that consent is the legal responsibility of physicians. Fifty-seven (58.2%) registered nurses and eighteen (56.3%) physician respondents agreed that consent remains the legal responsibility of physicians, while only 40% ($n = 2$) of administrators agreed. These differences were not statistically significant.

Fifty-six (41.8%) of the total respondents agreed that some patients with cancer are acceptable organ donors. Thirty-five percent ($n = 98$) of registered nurse respondents agreed, while 59% ($n = 32$) of the physicians and 60% ($n = 5$) of the administrators agreed, that some patients with cancer are acceptable organ donors. Fifty percent of the total respondents agreed that health institutions do not participate in organ procurement. Fifty percent ($n = 98$) of registered nurse respondents and 80% of hospital administrator respondents agreed that health institutions do not participate in organ procurement, while physician respondents were divided with 43.8% ($n = 32$) agreeing health institutions do

not participate in organ procurement. No statistically significant differences were found on the above noted knowledge items among health care professionals.

Total respondents having knowledge of actuarial survival following heart and liver transplant was less than 30% ($\underline{n} = 133$), with similar results for registered nurses (20.8%) and physicians (28.1%). Forty percent of administrators correctly indicated actuarial survival following heart transplant, while no administrators correctly responded to five-year actuarial survival following liver transplant. Fifty-two percent ($\underline{n} = 132$) of the total respondents correctly responded to the one-year actuarial survival following kidney transplant. Forty-seven percent ($\underline{n} = 96$) of registered nurses, 60% ($\underline{n} = 5$) of administrators, and 62.5% ($\underline{n} = 32$) of physicians correctly identified the one-year actuarial survival following kidney transplant. Thirty-two percent ($\underline{n} = 131$) of the total respondents correctly identified the number of patients currently waiting for an organ transplant in Canada. Only thirty percent ($\underline{n} = 96$) of registered nurse respondents and 28.1% ($\underline{n} = 32$) of physician respondents correctly identified the number of patients waiting for an organ transplant in Canada, while 80% of administrators were able to correctly identify the same.

Table 2

Total Respondents' Knowledge of Organ Donation and Transplantation

	Responses (%)			
Knowledge Statements	Agree	Disagree	Unsure	N
Does your hospital have written policies on organ donation?	63 (47.4)	11 (8.3)	59 (44.4)	135
Clinical guidelines declaring brain death are well established.	90 (67.2)	22 (16.4)	22 (16.4)	134
Laws recognize brain death as legal criteria for death.	75 (55.6)	8 (5.9)	52 (38.5)	135
Donors are brain dead patients on respirators.	109 (80.7)	21 (15.6)	5 (3.7)	135
Organ procurement follows asystole.	28 (20.9)	83 (61.9)	23 (17.2)	134
Consent is legal responsibility of physicians.	77 (57.0)	31 (23.0)	27 (20.0)	135
Many religions prohibit donation.	54 (40.0)	39 (28.9)	42 (31.1)	135
Donor families incur financial costs in process of donation.	7 (5.2)	106 (78.5)	22 (16.3)	135
Is legal for a living person to sell a kidney.	5 (3.7)	114 (84.4)	16 (11.9)	135
Some patients with cancer are acceptable organ donors.	56 (41.8)	53 (39.6)	25 (18.7)	134
Health institutions participate in organ procurement.	51 (38.1)	67 (50.0)	16 (11.9)	134
Health institutions have protocols to evaluate all comatose, ventilator-dependent patients for brain death criteria.	50 (37.0)	58 (43.0)	27 (20.0)	135
Health institutions have protocols to evaluate brain dead patients for possible organ donation.	24 (17.8)	82 (60.7)	29 (21.5)	135

Table 3

Total Respondents' Knowledge of Organ Donation and Transplantation

Knowledge Statements	Correct Response (%)	N
One year actuarial survival after heart transplant is: ~ 85%	31 (23.3)	133
Five year actuarial survival following liver transplant is: ~ 80%	27 (20.5)	132
One year actuarial survival following kidney transplant is: ~90%	68 (51.5)	132
Current waiting list for all patients waiting for an organ transplant in Canada is: 3500 patients	42 (32.1)	131

Table 4

Nurses, Physicians and Administrators Knowledge of Organ Donation and Transplantation

	Responses (%)									
	Registered Nurses (N = 98)			Physicians (N = 32)			Administrators (N = 5)			
Knowledge Statements	Agree	Disagree	Unsure	Agree	Disagree	Unsure	Agree	Disagree	Unsure	p
Does your hospital have written policies on organ donation?	56 (57.7)	6 (6.2)	35 (36.1)	4 (12.5)	4 (12.5)	24 (75.0)	3 (60.0)	1 (20.0)	1 (20.0)	.000*
Clinical guidelines declaring brain death are well established.	63 (64.9)	15 (15.5)	19 (19.6)	23 (71.9)	6 (18.8)	3 (9.4)	4 (80.0)	1 (20.0)		.578
Laws recognize brain death as legal criteria for death.	55 (56.1)	5 (5.1)	38 (38.8)	19 (59.4)	3 (9.4)	10 (31.3)	1 (20.0)		4 (80.0)	.292
Donors are brain dead patients on respirators.	80 (81.6)	14 (14.3)	4 (1.0)	25 (78.1)	6 (3.5)	1 (3.1)	4 (80.0)	1 (20.0)		.956
Organ procurement follows asystole.	20 (20.4)	60 (61.2)	18 (18.4)	5 (15.6)	22 (68.8)	4 (12.5)	3 (60.0)	1 (20.0)	1 (20.0)	.179
Consent is legal responsibility of physicians.	57 (58.2)	23 (23.5)	18 (18.4)	18 (56.3)	6 (18.8)	8 (25.0)	2 (40.0)	2 (40.0)	1 (20.0)	.791
Many religions prohibit donation.	43 (43.9)	22 (22.4)	33 (33.7)	9 (28.1)	17 (53.1)	6 (18.8)	2 (40.0)		3 (60.0)	.007*
Donor families incur financial costs in process of donation.	5 (5.1)	73 (74.5)	20 (20.4)	2 (6.3)	29 (90.6)	1 (3.1)		4 (80.0)	1 (20.0)	.231
Is legal for a living person to sell a kidney.	3 (3.1)	82 (83.7)	13 (13.3)	2 (6.3)	28 (87.5)	2 (6.3)		4 (80.0)	1 (20.0)	.699
Some patients with cancer are acceptable organ donors.	34 (34.7)	41 (41.8)	22 (22.4)	19 (59.4)	10 (31.3)	3 (9.4)	3 (60.0)	2 (40.0)		.099
Health institutions participate in organ procurement.	37 (37.8)	49 (50.0)	11 (11.2)	13 (40.6)	14 (43.8)	5 (15.6)	1 (20.0)	4 (80.0)		.622
Health institutions have protocols to evaluate all comatose, ventilator-dependent patients for brain death criteria.	40 (40.8)	40 (40.8)	18 (18.4)	8 (25.0)	16 (50.0)	8 (25.0)	2 (40.0)	2 (40.0)	1 (20.0)	.617
Health institutions have protocols to evaluate brain dead patients for possible organ donation.	19 (19.4)	58 (59.2)	21 (21.4)	5 (15.6)	20 (62.5)	7 (21.9)		4 (80.0)	1 (20.0)	.830

Note. * = $p \leq .05$

Table 5

Nurses, Physicians and Administrators Knowledge Of Organ Donation And Transplantation

Knowledge Statements	Correct Response (%)			p
	Registered Nurses (N = 96)	Physicians (N = 32)	Administrators (N = 5)	
One year actuarial survival after heart transplant is: ~ 85%	20 (20.8)	9 (28.1)	2 (40.0)	.193
Five year actuarial survival following liver transplant is: ~ 80%	21 (21.9)	6 (18.8)	0 (0.0)	.548
One year actuarial survival following kidney transplant is: ~90%	45 (46.9)	20 (62.5)	3 (60.0)	.050*
All patients waiting for an organ transplant in Canada is: 3500 patients	29 (30.2)	9 (28.1)	4 (80.0)	.231

Note. * = $p \leq .05$

Factors affecting respondents' knowledge of organ donation and transplantation were assessed in regards to age, years of experience, practice area, and health region. The majority of respondents in all age categories (26-39 years, 40-53 years, and 54-67 years) correctly answered the knowledge questions with the exception of statements 3 and 7 (refer to Table 6). Respondents' knowledge regarding whether laws recognize brain death as legal criteria for death, showed that 50.8% ($\underline{n} = 63$) of respondents in the first age category and 61.5% ($\underline{n} = 65$) of respondents in the second age category agreed, while 50% ($\underline{n} = 4$) of the final age category disagreed ($\chi^2 = 16.20$, $p = .003$). Less than 31% of respondents from the first two age categories (26-39 years and 40-53 years) disagreed that many religions prohibit donation while a larger proportion of respondents (75%) in the last age category (54-67 years) disagreed. Although variances were seen among age categories of respondents, no statistical differences were observed.

The majority of respondents in all three categories of years of experience (1-14 years, 15-29 years, and 30-44 years) correctly responded to the knowledge questions on organ donation and transplantation (refer to Table 7). All categories of years of experience disagreed when asked whether donor families incur financial costs in the process of organ donation. Seventy-five percent ($\underline{n} = 57$) of respondents with 1-14 years of experience, 81.4% ($\underline{n} = 70$) of respondents with 15-29 years of experience, and, 71.4% ($\underline{n} = 7$) of respondents with 30-44 years of experience disagreed that donor families incur financial costs in the process of organ donation ($\chi^2 = 11.95$, $p = .018$).

Clinical practice area (Emergency, ICU/CCU, other) was assessed for differences in relation to knowledge of organ donation and transplantation (refer to Table 8). All three practice areas identified respondents as generally well informed. The only

statistically significant difference among respondents in clinical practice areas was that 45.3% ($\underline{n} = 53$) of respondents from the Emergency Department and 62.5% ($\underline{n} = 56$) from the ICU/CCU knew that the hospital had an organ donation policy, while 81% ($\underline{n} = 21$) from other practice areas (Family Practice and Internal Medicine) were unsure ($\chi^2 = 18.47$, $p = .001$).

Clinical practice areas differed significantly when asked whether clinical guidelines declaring brain death were well established. Greater than 76% from the ICU/CCU ($\underline{n} = 56$) and from other practice areas ($\underline{n} = 21$) (Family Practice and Internal Medicine) agreed that clinical guidelines declaring brain death were well established, while only 53% ($\underline{n} = 53$) of respondents from the Emergency Department agreed ($\chi^2 = 10.55$, $p = .032$).

Respondents' knowledge of organ donation and transplantation in each health region showed individuals to be moderately informed with the exception of four statements (refer to Table 9). When asked whether their hospital had written policies on organ donation, respondents from three of the five health regions agreed. Fort MacMurray, at 60% ($\underline{n} = 15$), Lethbridge, at 57.6% ($\underline{n} = 33$) and Medicine Hat, at 54.5% ($\underline{n} = 22$) all agreed their hospitals had written policies on organ donation, while only 36.7% ($\underline{n} = 30$) from Grande Prairie and 34.3% ($\underline{n} = 35$) Red Deer agreed ($\chi^2 = 18.36$, $p = .019$).

Responses from the five health regions varied when respondents were asked whether many religions prohibit donation. Grande Prairie at 40% ($\underline{n} = 30$), Fort MacMurray at 53.3% ($\underline{n} = 15$), Red Deer at 42.9% ($\underline{n} = 35$), Lethbridge at 36.4%

($\underline{n} = 33$), and Medicine Hat at 31.8% ($\underline{n} = 22$) agreed that many religions prohibit donation. An equal number of respondents from Grande Prairie at 43.3% ($\underline{n} = 30$) and Lethbridge at 30.3% ($\underline{n} = 33$) disagreed that many religions prohibit donation. Similarly, a large number of respondents from Red Deer, at 40% ($\underline{n} = 35$) and Medicine Hat, at 45.5% ($\underline{n} = 22$) were uncertain whether many religions prohibit donation. Despite these variances no statistical differences were observed among health care respondents from the five health regions.

Respondents' knowledge regarding whether some patients with cancer are acceptable organ donors, showed that three out of five health regions were equally distributed between agreement and disagreement. Forty-one percent of respondents from Grande Prairie ($\underline{n} = 30$), Fort MacMurray ($\underline{n} = 15$), and Medicine Hat ($\underline{n} = 22$) agreed that some patients with cancer are acceptable organ donors while an equal number of respondents from the three regions disagreed. No statistically significant differences were found among health regions.

Table 6

Factors Affecting Respondents' Knowledge of Organ Donation and Transplantation: Age

	Responses (%)									
	26 - 39 years (N = 63)			40 - 53 years (N = 65)			54 - 67 years (N = 4)			
Knowledge Statements	Agree	Disagree	Unsure	Agree	Disagree	Unsure	Agree	Disagree	Unsure	p
Does your hospital have written policies on organ donation?	27 (42.9)	6 (9.5)	30 (47.6)	35 (53.8)	4 (6.2)	26 (40.0)	1 (25.0)	1 (25.0)	2 (50.0)	.474
Clinical guidelines declaring brain death are well established.	40 (63.5)	11 (17.5)	11 (17.5)	46 (70.8)	9 (13.8)	11 (16.9)	4 (100.0)			.657
Laws recognize brain death as legal criteria for death.	32 (50.8)	3 (4.8)	28 (44.4)	40 (61.5)	3 (4.6)	23 (35.4)	2 (50.0)	2 (50.0)		.003*
Donors are brain dead patients on respirators.	50 (79.4)	12 (19.0)	1 (1.6)	55 (84.6)	8 (12.3)	3 (4.6)	4 (100.0)			.569
Organ procurement follows asystole.	17 (33.3)	32 (50.8)	13 (20.6)	10 (15.4)	47 (72.3)	9 (13.8)	1 (25.0)	2 (50.0)	1 (25.0)	.239
Consent is legal responsibility of physicians.	37 (58.7)	14 (22.2)	12 (19.0)	36 (55.4)	17 (26.2)	13 (20.0)	3 (75.0)		1 (25.0)	.821
Many religions prohibit donation.	26 (41.3)	16 (25.4)	21 (33.3)	26 (40.0)	20 (30.8)	20 (30.8)	1 (25.0)	3 (75.0)		.306
Donor families incur financial costs in process of donation.	4 (6.3)	46 (73.0)	13 (20.6)	2 (3.1)	55 (84.6)	9 (13.8)	1 (25.0)	3 (75.0)		.214
Legal for living person to sell a kidney.		55 (87.3)	8 (12.7)	5 (7.7)	54 (83.1)	7 (10.8)		3 (75.0)	1 (25.0)	.205
Some patients with cancer are acceptable organ donors.	28 (44.4)	23 (36.5)	12 (19.0)	24 (36.9)	29 (44.6)	12 (18.5)	3 (75.0)	1 (25.0)		.549
Health institutions participate in organ procurement.	24 (38.1)	33 (52.4)	6 (9.5)	26 (40.0)	29 (44.6)	10 (15.4)	1 (25.0)	3 (75.0)		.630
Health institutions have protocols to evaluate comatose, ventilator-dependent patients for brain death.	22 (34.9)	30 (47.6)	11 (17.5)	27 (41.5)	24 (36.9)	15 (23.1)	1 (25.0)	2 (50.0)	1 (25.0)	.736
Health institutions have protocols to evaluate brain dead patients for possible organ donation.	13 (20.6)	37 (58.7)	13 (20.6)	11 (16.9)	40 (61.5)	15 (23.1)		3 (75.0)	1 (25.0)	.865

Note. * - $p \leq .05$

Table 7

Factors Affecting Respondents' Knowledge of Organ Donation and Transplantation:
Years Of Experience

	Responses (%)									
	1 – 14 years (N = 57)			15 – 29 years (N = 70)			30 – 44 years (N = 7)			
Knowledge Statements	Agree	Disagree	Unsure	Agree	Disagree	Unsure	Agree	Disagree	Unsure	p
Does your hospital have written policies on organ donation?	21 (36.8)	4 (7.0)	32 (56.1)	38 (54.3)	6 (8.6)	25 (35.7)	4 (57.1)	1 (14.3)	2 (28.6)	.001
Clinical guidelines declaring brain death are well established.	34 (59.6)	12 (21.1)	10 (17.5)	49 (70.0)	9 (12.9)	12 (17.1)	7 (100.0)			.259
Laws recognize brain death as legal criteria for death.	26 (45.6)	2 (3.5)	29 (50.9)	43 (61.4)	5 (7.1)	22 (31.4)	5 (71.4)	1 (14.3)	1 (14.3)	.119
Donors are brain dead patients on respirators.	46 (80.7)	10 (17.5)	1 (1.8)	57 (81.4)	10 (14.3)	3 (4.3)	6 (85.7)	1 (14.3)		.889
Organ procurement follows asystole.	12 (21.1)	31 (54.4)	13 (22.8)	13 (18.6)	49 (70.0)	8 (11.4)	3 (42.9)	2 (28.6)	2 (28.6)	.174
Consent is legal responsibility of physicians.	36 (63.2)	9 (15.8)	12 (21.1)	38 (54.3)	20 (28.6)	12 (17.1)	3 (42.9)	2 (28.6)	2 (28.6)	.465
Many religions prohibit donation.	22 (38.6)	15 (26.3)	20 (35.1)	30 (42.9)	21 (30.0)	19 (27.1)	2 (28.6)	3 (42.9)	2 (28.6)	.025
Donor families incur financial costs in process of donation.	1 (1.8)	43 (75.4)	13 (22.8)	4 (5.7)	57 (81.4)	9 (12.9)	2 (28.6)	3 (42.9)		.018*
Legal for living person to sell a kidney.	3 (5.3)	47 (82.5)	7 (12.3)	1 (1.4)	61 (87.1)	8 (11.4)	1 (14.3)	5 (71.4)	1 (14.3)	.445
Some patients with cancer are acceptable organ donors.	25 (43.9)	20 (35.1)	12 (21.1)	26 (37.1)	31 (44.3)	12 (17.1)	5 (71.4)	2 (28.6)		.561
Health institutions participate in organ procurement.	26 (45.6)	25 (43.9)	6 (10.5)	22 (31.4)	37 (52.9)	10 (14.3)	3 (42.9)	4 (57.1)		.429
Health institutions have protocols to evaluate comatose, ventilator-dependent patients for brain death	18 (31.6)	28 (49.1)	11 (19.3)	28 (40.0)	27 (38.6)	15 (21.4)	4 (57.1)	2 (28.6)	1 (14.3)	.003
Health institutions have protocols to evaluate brain dead patients for possible organ donation.	15 (26.3)	31 (54.4)	11 (19.3)	7 (10.0)	46 (65.7)	17 (24.3)	2 (28.6)	3 (42.9)	2 (28.6)	.003

Note. * = $p \leq .05$

Table 8

**Factors Affecting Respondents' Knowledge of Organ Donation and Transplantation:
Practice Area**

	Responses (%)									
	Emergency (N = 53)			ICU/CCU (N = 56)			Other (N = 21)			
Knowledge Statements	Agree	Disagree	Unsure	Agree	Disagree	Unsure	Agree	Disagree	Unsure	p
Does your hospital have written policies on organ donation?	24 (45.3)	4 (7.5)	25 (47.2)	35 (62.5)	4 (7.1)	17 (30.4)	2 (9.5)	1 (4.8)	17 (81.0)	.001*
Clinical guidelines declaring brain death are well established.	28 (52.8)	9 (17.0)	15 (28.3)	43 (76.8)	9 (16.1)	4 (7.1)	16 (76.2)	2 (9.5)	3 (14.3)	.032*
Laws recognize brain death as legal criteria for death.	29 (54.7)	2 (3.8)	22 (41.5)	31 (55.4)	4 (7.1)	21 (37.5)	13 (61.9)		8 (38.1)	.718
Donors are brain dead patients on respirators.	43 (81.1)	9 (17.0)	1 (1.9)	45 (80.4)	8 (14.3)	3 (5.4)	17 (81.0)	4 (19.0)		.719
Organ procurement follows asystole.	9 (17.0)	36 (67.9)	7 (13.2)	13 (23.2)	32 (57.1)	11 (19.6)	5 (23.8)	11 (52.4)	5 (23.8)	.628
Consent is legal responsibility of physicians.	26 (49.1)	18 (34.0)	9 (17.0)	34 (60.7)	10 (17.9)	12 (21.4)	13 (61.9)	3 (14.3)	5 (23.8)	.269
Many religions prohibit donation.	26 (49.1)	12 (22.6)	15 (28.3)	22 (39.3)	15 (26.8)	19 (33.9)	5 (23.8)	10 (47.6)	6 (28.6)	.191
Donor families incur financial costs in process of donation.	3 (5.7)	41 (77.4)	9 (17.0)	2 (3.6)	43 (76.8)	11 (19.6)	1 (4.8)	18 (85.7)	2 (9.5)	.853
Is legal for a living person to sell a kidney.	2 (3.8)	46 (86.8)	5 (9.4)	1 (1.8)	47 (83.9)	8 (14.3)	2 (9.5)	18 (85.7)	1 (4.8)	.428
Some patients with cancer are acceptable organ donors.	23 (43.4)	19 (35.8)	11 (20.8)	20 (35.7)	26 (46.4)	9 (16.1)	11 (52.4)	6 (28.6)	4 (19.0)	.572
Health institutions participate in organ procurement.	21 (39.6)	24 (45.3)	8 (15.1)	19 (33.9)	32 (57.1)	4 (7.1)	9 (42.9)	8 (38.1)	4 (19.0)	.387
Health institutions have protocols to evaluate all comatose, ventilator-dependent patients for brain death criteria.	22 (41.5)	18 (34.0)	13 (24.5)	21 (37.5)	27 (48.2)	8 (14.3)	6 (28.6)	10 (47.6)	5 (23.8)	.440
Health institutions have protocols to evaluate brain dead patients for possible organ donation.	7 (13.2)	31 (58.5)	15 (28.3)	10 (17.9)	38 (67.9)	8 (14.3)	6 (28.6)	10 (47.6)	5 (23.8)	.226

Note. * = $p \leq .05$

Table 9

Factors Affecting Respondents' Knowledge of Organ Donation and Transplantation: Health Region

	Responses (%)															
	GP (N = 30)			FM (N = 15)			RD (N = 35)			LT (N = 33)			MD (N = 22)			
Knowledge Statements	A	D	U	A	D	U	A	D	U	A	D	U	A	D	U	p
Does your hospital have written policies on organ donation?	11 (36.7)	1 (3.3)	18 (60.0)	9 (60.0)		6 (40.0)	12 (34.3)	7 (20.0)	15 (42.9)	19 (57.6)		14 (42.4)	12 (54.5)	3 (13.6)	6 (27.3)	.019*
Clinical guidelines declaring brain death are well established	20 (66.7)	5 (16.7)	5 (16.7)	12 (80.0)	1 (6.7)	1 (6.7)	22 (62.9)	8 (22.9)	5 (14.3)	22 (66.7)	3 (9.1)	8 (24.2)	14 (63.6)	5 (22.7)	3 (13.6)	.619
Laws recognize brain death as legal criteria for death	21 (70.0)	1 (3.3)	8 (26.7)	9 (60.0)	1 (6.7)	5 (33.3)	15 (42.9)	2 (5.7)	18 (51.4)	18 (54.5)	1 (3.0)	14 (42.4)	12 (54.5)	3 (13.6)	7 (31.8)	.401
Donors are brain dead patients on respirators	27 (90.0)	2 (6.7)	1 (3.3)	10 (66.7)	4 (26.7)	1 (6.7)	27 (77.1)	7 (20.0)	1 (2.9)	26 (78.8)	6 (18.2)	1 (3.0)	19 (86.4)	2 (9.1)	1 (4.5)	.730
Organ procurements follows asystole	5 (16.7)	20 (66.7)	4 (13.3)	5 (33.3)	8 (53.3)	2 (13.3)	7 (20.0)	23 (65.7)	5 (14.3)	6 (18.2)	21 (63.6)	6 (18.2)	5 (22.7)	11 (50.0)	6 (27.3)	.830
Consent is legal responsibility of physicians	20 (66.7)	3 (10.0)	7 (23.3)	11 (73.3)	2 (13.3)	2 (13.3)	19 (54.3)	7 (20.0)	9 (25.7)	18 (54.5)	10 (30.3)	5 (15.2)	9 (40.9)	9 (40.9)	4 (18.2)	.228
Many religions prohibit donation	12 (40.0)	13 (43.3)	5 (16.7)	8 (53.3)	5 (33.3)	2 (13.3)	15 (42.9)	6 (17.1)	14 (40.0)	12 (36.4)	10 (30.3)	11 (33.3)	7 (31.8)	5 (22.7)	10 (45.5)	.180
Donor families incur financial costs in process of donation	3 (10.0)	21 (70.0)	6 (14.0)		14 (93.3)	1 (6.7)	3 (8.6)	26 (74.3)	6 (17.1)		28 (84.8)	5 (15.2)	1 (4.5)	17 (77.3)	4 (18.2)	.562
Is legal for a living person to sell a kidney	3 (10.0)	26 (86.7)	1 (3.3)		12 (80.0)	3 (20.0)		28 (80.0)	7 (20.0)	2 (6.1)	28 (84.8)	3 (9.1)		20 (90.9)	2 (9.1)	.170
Some patients with cancer are acceptable organ donors	13 (43.3)	14 (46.7)	3 (10.0)	7 (46.7)	6 (40.0)	2 (13.3)	17 (48.6)	7 (20.0)	11 (31.4)	10 (30.3)	17 (51.5)	6 (18.2)	9 (40.9)	9 (40.9)	3 (13.6)	.187
Health institutions participate in organ recovery	11 (36.7)	14 (46.7)	5 (16.7)	7 (46.7)	8 (53.3)		13 (37.1)	18 (51.4)	4 (11.4)	14 (42.4)	13 (39.4)	6 (18.2)	6 (27.3)	14 (63.6)	1 (4.5)	.500
Health institutions have protocols to evaluate all comatose, ventilator-dependent patients for brain death criteria	14 (46.7)	11 (36.7)	5 (16.7)	7 (46.7)	3 (20.0)	5 (33.3)	9 (25.7)	19 (54.3)	7 (20.0)	10 (30.3)	14 (42.4)	9 (27.3)	10 (45.5)	11 (50.0)	1 (4.5)	.171
Health institutions have protocols to evaluate brain dead patients for possible organ donation	7 (23.3)	19 (63.3)	4 (13.3)	3 (20.0)	9 (60.0)	3 (20.0)	5 (14.3)	22 (62.9)	8 (22.9)	6 (18.2)	17 (51.5)	10 (30.3)	3 (13.6)	15 (68.2)	4 (18.2)	.855

Note. GP = Grande Prairie, FM = Fort MacMurray, RD = Red Deer, LT = Lethbridge, MD = Medicine Hat

A = Agree, D = Disagree, U = Unsure

* = $p \leq .05$

Factors affecting respondents' knowledge of actuarial survival and waiting lists for transplantation were assessed in relation to age, years of experience, practice area and health region (refer to Tables 10, 11, 12, and 13). Less than 35% of total respondents were knowledgeable of the actuarial survival following heart or liver transplant, with a slightly higher percentage of respondents (<64%) aware of actuarial survival following kidney transplant, regardless of age, years of experience, practice area and health region. Less than 50% of all respondents were aware of the number of patients waiting for an organ transplant in all categories of age, years of experience, practice area, and health region. No statistically significant differences were found among health care professionals for the above knowledge statements.

Table 10

Factors Affecting Respondents' Knowledge of Organ Donation and Transplantation: Age

Knowledge Statements	Correct Response (%)			p
	26-39 years (N = 61)	40-53 years (N = 66)	54-67 years (N = 4)	
One year actuarial survival after heart transplant is: ~ 85%	12 (19.7)	17 (25.8)	1 (25.0)	.445
Five year actuarial survival following liver transplant is: ~ 80%	7 (11.5)	19 (28.8)	0 (0.0)	.096
One year actuarial survival following kidney transplant is: ~ 90%	27 (44.3)	39 (59.1)	2 (50.0)	.460
All patients waiting for an organ transplant in Canada is: 3500 patients	18 (29.5)	22 (33.3)	2 (50.0)	.625

Table 11

Factors Affecting Respondents' Knowledge of Organ Donation and Transplantation:
Years Of Experience

Knowledge Statements	Correct Response (%)			p
	1 – 14 years (N = 57)	15 – 29 years (N = 70)	30 – 44 years (N = 7)	
One year actuarial survival after heart transplant is: ~ 85%	14 (24.6)	15 (21.4)	2 (28.6)	.977
Five year actuarial survival following liver transplant is: ~ 80%	9 (15.8)	17 (24.3)	1 (14.3)	.596
One year actuarial survival following kidney transplant is: ~ 90%	30 (52.6)	36 (51.4)	2 (28.6)	.572
All patients waiting for an organ transplant in Canada is: 3500 patients	16 (28.1)	21 (30.0)	5 (71.4)	.246

Table 12

Factors Affecting Respondents' Knowledge of Organ Donation and Transplantation:
Practice Area

Knowledge Statements	Correct Response (%)			p
	Emergency (N =51)	ICU/CCU (N =56)	Other (N =21)	
One year actuarial survival after heart transplant is: ~ 85%	12 (23.5)	13 (23.2)	6 (28.6)	.795
Five year actuarial survival following liver transplant is: ~ 80%	12 (23.5)	13 (23.2)	1 (4.8)	.404
One year actuarial survival following kidney transplant is: ~ 90%	28 (54.9)	27 (48.2)	11 (52.4)	.117
All patients waiting for an organ transplant in Canada is: 3500 patients	17 (30.4)	15 (26.8)	9 (42.9)	.239

Table 13

Factors Affecting Respondents' Knowledge of Organ Donation and Transplantation:
Health Region

	Correct Response (%)					
Knowledge Statements	Grande Prairie (N = 29)	Fort MacMurray (N = 15)	Red Deer (N = 33)	Lethbridge (N = 33)	Medicine Hat (N = 22)	p
One year actuarial survival after heart transplant is: ~ 85%	6 (20.7)	5 (33.3)	5 (15.2)	10 (30.3)	5 (22.7)	.597
Five year actuarial survival following liver transplant is: ~ 80%	4 (13.8)	3 (20.0)	8 (24.2)	8 (24.2)	4 (18.2)	.905
One year actuarial survival following kidney transplant is: ~ 90%	12 (41.4)	7 (46.7)	16 (48.5)	21 (63.6)	12 (54.5)	.696
All patients waiting for an organ transplant in Canada is: 3500 patients	10 (34.5)	3 (20.0)	8 (24.2)	14 (42.4)	7 (31.8)	.664

Attitudes Towards Organ Donation and Transplantation

Attitudes regarding organ donation and transplantation were obtained through 24 items on the 'Organ Donation and Transplantation: A Survey of Critical Care Health Professionals' questionnaire using a five-point Likert scale (1 = strongly agree, 2 = agree, 3 = disagree, 4 = strongly disagree, 5 = unsure) (refer to Table 14 and Table 15).

Fifty percent of the total respondents ($n = 135$) agreed that procurement should be the responsibility of physicians. Of the total respondents, fifty-one percent ($n = 98$) of registered nurses and 50% ($n = 32$) of physicians agreed that procurement should be the responsibility of physicians, while 60% ($n = 5$) of administrators disagreed. Forty percent of the total respondents ($n = 135$) agreed that donor medical protocols conflicted with procedures for protecting transplantable organs. Among the health care professionals, forty-two percent ($n = 98$) of registered nurses, 28.1% ($n = 32$) of physicians, and 60% ($n = 5$) of administrators agreed that donor medical protocols conflicted with procedures for protecting transplantable organs. No statistically significant differences were found among health care professionals.

Thirty-seven percent of the total respondents ($n = 135$) agreed that physicians should not receive a donor evaluation fee. Forty-two percent of registered nurses ($n = 98$) agreed that physicians should not receive a donor evaluation fee, while administrators were divided, with 40% ($n = 5$) agreeing and 40% ($n = 5$) disagreeing. Fifty-three percent of physicians agreed they should receive a donor evaluation fee. No statistically significant differences were found among health care professionals. Forty-seven (34.8%) of the total respondents agreed that physicians should receive a fee for performing brain death evaluations. Among the three health care professionals, seventeen (53.1%)

physician respondents and three (60%) administrator respondents agreed that physicians should receive a fee for performing brain death evaluations while only twenty seven (27.6%) of registered nurse respondents agreed that physicians should receive a fee for performing brain death evaluations ($\chi^2 = 29.96$, $p = .000$).

Greater than 70% of the total respondents agreed or strongly agreed that: (1) health care providers accept brain death criteria (registered nurses $n = 98$, physicians $n = 32$, administrators $n = 5$), (2) physicians who certify brain death should not be involved in removal or transplantation of organs (registered nurses $n = 98$, physicians $n = 32$, administrators $n = 5$), (3) organ donation helps families in their grieving process (registered nurses $n = 98$, physicians $n = 32$, administrators $n = 5$), (4) organ procurement teams treat the donor with respect (registered nurses $n = 98$, physicians $n = 32$, administrators $n = 5$), (5) they approved of organ donation (registered nurses $n = 98$, physicians $n = 32$, administrators $n = 5$), (6) the media should routinely remind the public about the need for organ donation (registered nurses $n = 98$, physicians $n = 32$, administrators $n = 5$), (7) health care institutions should participate in organ procurement (registered nurses $n = 98$, physicians $n = 32$, administrators $n = 5$), (8) health institutions should have protocols to evaluate comatose, ventilator-dependent patients by brain death criteria (registered nurses $n = 98$, physicians $n = 32$, administrators $n = 5$), (9) health care institutions should have protocols to evaluate brain dead patients for organ donation (registered nurses $n = 98$, physicians $n = 32$, administrators $n = 5$), and, (10) the organ donation process is very time consuming (registered nurses $n = 98$, physicians $n = 32$, administrators $n = 5$).

More than 72 % of the total respondents disagreed or strongly disagreed that (1) the public is informed about organ donation (registered nurses $n = 98$, physicians $n = 32$, administrators $n = 5$), (2) the donor may appear disfigured at the time of the funeral (registered nurses $n = 98$, physicians $n = 32$, administrators $n = 5$), (3) donor families should receive payment for the donation (registered nurses $n = 98$, physicians $n = 32$, administrators $n = 5$), (4) donor families should receive tax credits (registered nurses $n = 98$, physicians $n = 32$, administrators $n = 5$), and , (5) the government should give cash incentives to families who grant consent (registered nurses $n = 98$, physicians $n = 32$, administrators $n = 5$).

Greater than 62% ($n = 135$) of the total respondents disagreed or strongly disagreed that procurement teams effectively educate professionals regarding procurement. Of the total respondents, sixty percent ($n = 98$) of registered nurses, 65.6% ($n = 32$) physicians and 80% ($n = 5$) of administrators disagreed or strongly disagreed that procurement teams effectively educate professionals regarding procurement. Ninety-four (69.6%) of the total respondents disagreed or strongly disagreed that presumed consent should be law. Seventy percent ($n = 98$) of registered nurses, 68.8% ($n = 32$) of physicians, and 60% ($n = 5$) administrators disagreed or strongly disagreed that presumed consent should be law. No statistically significant differences were noted among health care respondents regarding the above attitudes.

Seventy-three percent ($n = 135$) of the total respondents agreed/strongly agreed that brain death criteria is difficult to explain to families. Of the health care professionals, 76.5% of registered nurses ($n = 98$), 56.3% of physicians ($n = 32$), and 100% of administrators ($n = 5$) agreed/strongly agreed that brain death criteria is difficult to

explain to families ($\chi^2 = 18.02$, $p = .021$). Seventy-nine percent ($n = 135$) of the total respondents disagreed/strongly disagreed that nursing staff should receive extra financial compensation for participating in donation. Eighty-six percent of registered nurses ($n = 98$), 80% of administrators ($n = 5$), and 59.4% of physicians ($n = 32$) disagreed/strongly disagreed that nursing staff should receive extra financial compensation for participating in donation ($\chi^2 = 16.93$, $p = .031$).

Factors affecting respondents' attitudes towards organ donation and transplantation were assessed in relation to age, years of experience, practice area, and health regions. More than 85% of respondents in all age categories (26-39 years, 40-53 years, 54-67 years) strongly agreed or agreed that: (1) they approved of organ donation (26-39 years $n = 63$, 40-53 years $n = 66$, 54-67 years $n = 4$), (2) the media should routinely remind the public about the need for organ donation (26-39 years $n = 63$, 40-53 years $n = 66$, 54-67 years $n = 4$), (3) health care institutions should participate in organ procurement (26-39 years $n = 63$, 40-53 years $n = 66$, 54-67 years $n = 4$), (4) health institutions should have protocols to evaluate comatose, ventilator-dependent patients by brain death criteria (26-39 years $n = 63$, 40-53 years $n = 66$, 54-67 years $n = 4$), and, (5) health institutions should have protocols to evaluate brain dead patients for donation (26-39 years $n = 63$, 40-53 years $n = 66$, 54-67 years $n = 4$) (refer to Table 16). No statistically significant differences were found among respondents in the three age categories in relation to the above attitude statements.

Table 14

Total Respondents' Attitudes Towards Organ Donation and Transplantation

Attitude Statements	Responses (%)					
	SA	A	D	SD	U	Mode
Health providers accept brain death criteria.	18 (13.3)	88 (65.2)	13 (9.6)	1 (0.7)	15 (11.1)	2
Brain death is difficult to explain to families.	35 (25.9)	63 (46.7)	31 (23.0)	5 (3.7)	1 (0.7)	2
Procurement should be responsibility of physicians.	19 (14.1)	68 (50.4)	39 (28.9)	4 (3.0)	5 (3.7)	2
Physicians who certify brain death should not be involved in removal/transplantation.	51 (37.8)	45 (33.3)	22 (16.3)	5 (3.7)	12 (8.9)	1
Donor medical protocols conflict with procedures for protecting transplantable organs.	10 (7.4)	53 (39.6)	26 (19.4)	7 (5.2)	38 (28.4)	2
Donation helps families grieve.	18 (13.4)	90 (66.7)	4 (3.0)	2 (1.5)	20 (14.9)	2
The public is informed about donation.		10 (7.4)	85 (63.0)	29 (21.5)	11 (8.1)	3
Procurement teams effectively educate professionals regarding procurement.	3 (2.2)	36 (26.7)	63 (46.7)	21 (15.6)	12 (8.9)	3
Procurement teams treat donors with respect.	42 (31.1)	63 (46.7)	4 (3.0)	1 (0.7)	25 (18.5)	2
I approve of organ donation.	89 (65.9)	44 (32.6)		1 (0.7)	1 (0.7)	1
The donor may appear disfigured at time of funeral.	1 (0.7)	9 (6.7)	61 (45.2)	50 (37.0)	14 (10.4)	3
Donor families should receive payment for donation.		5 (3.7)	54 (40.0)	69 (51.1)	7 (5.2)	4
Media should routinely remind public about need of donation.	63 (46.7)	65 (48.1)	2 (1.5)	1 (0.7)	4 (3.0)	2
Presumed consent should be law.	10 (7.4)	16 (11.9)	63 (46.7)	31 (23.0)	15 (11.1)	3
Brain death criteria should be law.	25 (18.7)	57 (42.2)	27 (20.0)	6 (4.4)	20 (14.8)	2
Physicians should receive donor evaluation fee.	6 (4.4)	40 (29.6)	50 (37.0)	30 (22.2)	9 (6.7)	3
Physicians should receive fee for brain death evaluations.	14 (10.4)	47 (34.8)	45 (33.3)	23 (17.0)	6 (4.4)	2
Nursing staff should receive extra financial compensation for participating in donation.	2 (1.5)	20 (14.8)	68 (50.4)	39 (28.9)	6 (4.4)	3
Donor families should receive tax credits.	4 (3.0)	18 (13.3)	60 (44.4)	38 (28.1)	20 (14.8)	3
Gov't should give cash incentives to families who grant consent.	2 (1.5)	4 (3.0)	62 (45.9)	56 (41.5)	11 (8.1)	3
Health institutions should participate in organ procurement.	58 (43.0)	59 (43.7)	12 (8.9)		6 (4.4)	2
Health institutions should have protocols to evaluate comatose, ventilator-dependent patients by brain death criteria.	48 (35.6)	70 (51.9)	10 (7.4)	1 (0.7)	6 (4.4)	2
Health institutions should have protocols to evaluate brain dead patients for donation.	46 (34.1)	71 (52.6)	11 (8.1)	2 (1.5)	5 (3.7)	2
Organ recovery is time consuming.	33 (24.6)	59 (44.0)	25 (18.7)	1 (0.7)	16 (11.9)	2

Note. SA = Strongly Agree; A = Agree; D = Disagree; SD = Strongly Disagree; U = Unsure

Table 15

Nurses, Physicians and Administrators Attitudes Towards Organ Donation and Transplantation

Attitude Statements	Responses (135)														
	Registered Nurses (N = 98)					Physicians (N = 32)					Administrators (N = 5)				
	SA	A	D	SD	U	SA	A	D	SD	U	SA	A	D	SD	U
Health providers accept brain death criteria.	12	64	8	1	13	6	19	5		2		5			
Brain death is difficult to explain to families.	27	48	21	2		4	14	10	3	1	4	1			
Procurement should be responsibility of physicians.	16	50	25	3	4	3	16	11	1	1		2	3		
Physicians who certify brain death should not be involved in removal/transplantation.	34	28	19	5	12	15	14	3			2	3			
Donor medical protocols conflict with procedures for protecting transplantable organs.	9	41	15	3	30	1	9	11	4	7		3			1
Donation helps families grieve.	15	63	3	1	15	3	23	1	1	4		4			1
Public is informed about donation		6	60	23	9		3	22	6	1		1	3		1
Procurement teams effectively educate professionals regarding procurement.	2	28	42	17	9	1	7	17	4	3		1	4		
Procurement teams treat donors with respect.	33	39	4	1	21	7	21			4	2	3			
I approve of organ donation	64	32		1	1	21	11				4	1			
The donor may appear disfigured at time of funeral.	1	5	42	37	13		4	16	11	1			3	2	
Donor families should receive payment for the donation.		2	42	48	6		2	10	20			1	2	1	1
Media should routinely remind public about need of donation	48	44	2	1	3	14	17			1	1	4			
Presumed consent should be law.	3	13	45	24	13	6	3	16	6	1	1		2	1	1
Brain death criteria should be law.	21	43	16	3	15	3	13	10	3	3	1	1	1		2
Physicians should receive donor evaluation fee.	4	21	41	24	8	2	17	7	5	1		2	2	1	
Physicians should receive fee for brain death evaluations.	5	27	41	19	6	9	17	3	3			3	1	1	
Nursing staff should receive extra financial compensation for participating in donation.	1	10	57	27	3	1	10	9	10	2			2	2	1
Donor families should receive tax credits.	3	10	42	27	15	1	3	15	9	4			2	2	1
Gov't should give cash incentives to families who grant consent.	2	3	48	38	7		1	11	17	3			3	1	1
Health institutions should participate in organ procurement	48	38	9		3	8	19	3		2	2	2			1
Health institutions should have protocols to evaluate comatose, ventilator-dependent patients by brain death criteria.	39	50	6	1	2	8	18	3		3	1	2	1		1
Health institutions should have protocols to evaluate brain dead patients for donation.	37	50	7	2	2	8	19	3		2	1	2	1		1
Organ recovery is time consuming	26	38	19	1	13	7	16	6		3		5			

Note. SA = Strongly Agree; A = Agree; D = Disagree; SD = Strongly Disagree; U = Unsure

Greater than 80% of respondents in all three age categories disagreed or strongly disagreed that: (1) the donor may appear disfigured at the time of the funeral (26-39 years $\underline{n} = 63$, 40-53 years $\underline{n} = 66$, 54-67 years $\underline{n} = 4$), (2) donor families should receive payment for the donation (26-39 years $\underline{n} = 63$, 40-53 years $\underline{n} = 66$, 54-67 years $\underline{n} = 4$), and, (3) the government should give cash incentives to families who grant consent for donation (26-39 years $\underline{n} = 63$, 40-53 years $\underline{n} = 66$, 54-67 years $\underline{n} = 4$).

More than 55% of respondents in all three age categories disagreed or strongly disagreed that: (1) the public is informed about organ donation (26-39 years $\underline{n} = 63$, 40-53 years $\underline{n} = 66$, 54-67 years $\underline{n} = 4$), (2) procurement teams effectively educate professionals regarding procurement (26-39 years $\underline{n} = 63$, 40-53 years $\underline{n} = 66$, 54-67 years $\underline{n} = 4$), and, (3) presumed consent should be law (26-39 years $\underline{n} = 63$, 40-53 years $\underline{n} = 66$, 54-67 years $\underline{n} = 4$). Thirty-eight (60.3%) of respondents 26 to 39 years and 40 (60.6%) of respondents 40 to 53 years disagreed or strongly disagreed that physicians should receive a donor evaluation fee while 75% of respondents 54 to 67 years agreed and 25% disagreed. Forty-nine (77.8%) of respondents 26 to 39 years and fifty-four (81.8%) respondents 40 to 53 years of age disagreed or strongly disagreed that nursing staff should receive extra financial compensation for participating in organ donation, while 50% ($\underline{n} = 4$) of respondents 54 to 67 years of age agreed.

Seventy percent of the respondents in the three categories of years of experience agreed or strongly agreed that: (1) brain death is difficult to explain to families (1-14 years $\underline{n} = 57$, 15-29 years $\underline{n} = 70$, 30-44 years $\underline{n} = 7$), and (2) organ donation helps families in their grieving process (1-14 years $\underline{n} = 57$, 15-29 years $\underline{n} = 70$, 30-44 years

$\underline{n} = 7$). Seventy-seven percent or more respondents in the three categories of years of experience disagreed or strongly disagreed that: (1) the donor may appear disfigured at the time of the funeral (1-14 years $\underline{n} = 57$, 15-29 years $\underline{n} = 70$, 30-44 years $\underline{n} = 7$), (2) donor families should receive payment for the donation (1-14 years $\underline{n} = 57$, 15-29 years $\underline{n} = 70$, 30-44 years $\underline{n} = 7$), and, (3) the government should give cash incentives to families who grant consent for donation (1-14 years $\underline{n} = 57$, 15-29 years $\underline{n} = 70$, 30-44 years $\underline{n} = 7$) (refer to Table 17).

More than 82% of respondents in the three categories of years of experience agreed or strongly agreed that: (1) they approve of organ donation (1-14 years $\underline{n} = 57$, 15-29 years $\underline{n} = 70$, 30-44 years $\underline{n} = 7$), (2) the media should routinely remind the public about the need for organ donation (1-14 years $\underline{n} = 57$, 15-29 years $\underline{n} = 70$, 30-44 years $\underline{n} = 7$), (3) health care institutions should participate in organ procurement (1-14 years $\underline{n} = 57$, 15-29 years $\underline{n} = 70$, 30-44 years $\underline{n} = 7$), (4) health care institutions should have protocols to evaluate comatose, ventilator-dependent patients by brain death criteria (1-14 years $\underline{n} = 57$, 15-29 years $\underline{n} = 70$, 30-44 years $\underline{n} = 7$), and, (5) health care institutions should have protocols to evaluate brain dead patients for organ donation (1-14 years $\underline{n} = 57$, 15-29 years $\underline{n} = 70$, 30-44 years $\underline{n} = 7$). Eighty-seven percent ($\underline{n} = 57$) of respondents in the category 15-29 years and 100% respondents in the category 30-44 years of experience agreed or strongly agreed that health providers accept brain death criteria however only 66.7% of respondents with 1-14 years of experience agreed or strongly agreed. No statistically significant differences were observed among the three categories of years of experience in the above attitude items.

More than 70% of respondents in the three categories of practice area agreed or strongly agreed that: (1) health care providers accept brain death criteria (Emergency $n = 53$, ICU/CCU $n = 56$, Other $n = 21$), (2) brain death is difficult to explain to families (Emergency $n = 53$, ICU/CCU $n = 56$, Other $n = 21$), and, (3) organ donation helps families with their grieving process (Emergency $n = 53$, ICU/CCU $n = 56$, Other $n = 21$) (refer to Table 18). Greater than 60% of respondents from the three practice areas disagreed or strongly disagreed that: (1) procurement teams effectively educate professionals regarding procurement (Emergency $n = 53$, ICU/CCU $n = 56$, Other $n = 21$), (2) the public is informed about organ donation (Emergency $n = 53$, ICU/CCU $n = 56$, Other $n = 21$), (3) presumed consent should be passed as law (Emergency $n = 53$, ICU/CCU $n = 56$, Other $n = 21$), and, (4) donor families should receive tax credits (Emergency $n = 53$, ICU/CCU $n = 56$, Other $n = 21$).

More than 80% of respondents from the three practice areas agreed or strongly agreed that: (1) they approved of organ donation (Emergency $n = 53$, ICU/CCU $n = 56$, Other $n = 21$), (2) the media should routinely remind the public about the need for organ donation (Emergency $n = 53$, ICU/CCU $n = 56$, Other $n = 21$), (3) health care institutions should have protocols to evaluate comatose, ventilator-dependent patients by brain death criteria (Emergency $n = 53$, ICU/CCU $n = 56$, Other $n = 21$), and, (4) health care institutions should have protocols to evaluate brain dead patients for organ donation (Emergency $n = 53$, ICU/CCU $n = 56$, Other $n = 21$). Equal percentage of respondents disagreed or strongly disagreed that: (1) the donor may appear disfigured at the time of the funeral (Emergency $n = 53$, ICU/CCU $n = 56$, Other $n = 21$), (2) donor families should receive payment for the donation (Emergency $n = 53$, ICU/CCU $n = 56$, Other

$\underline{n} = 21$), and, (3) government should give cash incentives to families who grant consent (Emergency $\underline{n} = 53$, ICU/CCU $\underline{n} = 56$, Other $\underline{n} = 21$). Statistically significant differences were not observed among practice area respondents in the above attitude statements.

Eighty-one percent ($\underline{n} = 53$) of respondents from the Emergency Department and 90.5% ($\underline{n} = 21$) from Family Practice/Internal Medicine areas agreed or strongly agreed that procurement teams treat organ donors with respect while less than 70% ($\underline{n} = 56$) from the ICU/CCU agreed or strongly agreed. When asked if physicians should receive a fee for making brain death evaluations, respondents showed divided responses from all practice areas. Fifty-one percent ($\underline{n} = 53$) from the Emergency Department, 32% ($\underline{n} = 56$) from ICU/CCU, and 57% ($\underline{n} = 21$) from Family Practice/Internal Medicine agreed or strongly agreed that physicians should receive a fee for making brain death evaluations. Statistically significant differences were not observed among the three practice areas in relation to the above attitude items.

Respondents' attitudes on organ donation and transplantation were assessed within the five health regions (Grande Prairie, Fort MacMurray, Red Deer, Lethbridge, and Medicine Hat) (refer to Table 19A and 19B). Center responses did not differ greatly with the exception of four statements. Significant differences were seen among health regions when respondents were asked whether donor medical protocols conflict with procedures for protecting transplantable organs. Twenty-one percent of respondents from Lethbridge ($\underline{n} = 33$), 33% of respondents from Grande Prairie ($\underline{n} = 30$), 46% of respondents from both Red Deer ($\underline{n} = 35$) and Medicine Hat ($\underline{n} = 22$), and 67.7% of respondents from Fort MacMurray agreed that donor medical protocols conflict with procedures for protecting transplantable organs ($\chi^2 = 28.18$, $p = .030$).

Responses from the five health regions differed significantly when respondents were asked whether procurement teams effectively educate health care professionals regarding organ procurement. Forty-seven percent of respondents from Grande Prairie ($\underline{n} = 30$), 55% of respondents from Medicine Hat ($\underline{n} = 22$), 58% of respondents from Lethbridge ($\underline{n} = 33$), 73% of respondents from Fort MacMurray ($\underline{n} = 15$), and 80% of respondents from Red Deer ($\underline{n} = 35$) disagreed or strongly disagreed that procurement teams effectively educate health care professionals regarding organ procurement ($\chi^2 = 27.02$, $p = .041$).

Regional variation differed significantly in regards to respondents' belief that brain death criteria should be passed as law. Greater than 60% of respondents from four out of five health regions (Grande Prairie $\underline{n} = 30$, Fort MacMurray $\underline{n} = 15$, Red Deer $\underline{n} = 35$, and Lethbridge $\underline{n} = 33$) agreed/strongly agreed that brain death criteria should be passed as law while the remaining health region respondents (Medicine Hat $\underline{n} = 22$) agreed/strongly agreed at 45.5% ($\chi^2 = 28.35$, $p = .029$). Significant differences were seen among the five health regions in relation to respondents' belief that physicians should receive a fee for brain death evaluations. Forty-three percent of respondents from Grande Prairie ($\underline{n} = 30$) and Red Deer ($\underline{n} = 35$), 55% of respondents from Lethbridge ($\underline{n} = 33$), 59% of respondents from Medicine Hat ($\underline{n} = 22$), and, 60% of respondents from Fort MacMurray ($\underline{n} = 15$) disagreed or strongly disagreed that physicians should receive a fee for brain death evaluations ($\chi^2 = 30.88$, $p = .014$).

Greater than 72% of respondents from all health regions agreed/strongly agreed that: (1) health care providers accept brain death criteria (Grande Prairie $\underline{n} = 30$, Fort MacMurray $\underline{n} = 15$, Red Deer $\underline{n} = 35$, Lethbridge $\underline{n} = 33$, Medicine Hat $\underline{n} = 22$), (2) organ

donation helps families with their grieving process (Grande Prairie $n = 30$, Fort MacMurray $n = 15$, Red Deer $n = 35$, Lethbridge $n = 33$, Medicine Hat $n = 22$), (3) procurement teams treat donors with respect (Grande Prairie $n = 30$, Fort MacMurray $n = 15$, Red Deer $n = 35$, Lethbridge $n = 33$, Medicine Hat $n = 22$), and, (4) health care institutions should participate in the organ procurement process (Grande Prairie $n = 30$, Fort MacMurray $n = 15$, Red Deer $n = 35$, Lethbridge $n = 33$, Medicine Hat $n = 22$). Greater than 70% of all respondents from the five health region disagreed or strongly disagreed that: (1) the public is informed about organ donation (Grande Prairie $n = 30$, Fort MacMurray $n = 15$, Red Deer $n = 35$, Lethbridge $n = 33$, Medicine Hat $n = 22$), (2) the donor may appear disfigured at the time of the funeral (Grande Prairie $n = 30$, Fort MacMurray $n = 15$, Red Deer $n = 35$, Lethbridge $n = 33$, Medicine Hat $n = 22$), and (3) nursing staff should receive extra financial compensation for participating in organ donation (Grande Prairie $n = 30$, Fort MacMurray $n = 15$, Red Deer $n = 35$, Lethbridge $n = 33$, Medicine Hat $n = 22$). No statistically significant differences were seen among health regions in the above noted attitude items.

When respondents were asked whether health care institutions should have protocols to evaluate comatose, ventilator-dependent patients by brain death criteria and whether they should be required to evaluate brain dead patients for organ donation, more than 81% (Grande Prairie $n = 30$, Fort MacMurray $n = 15$, Red Deer $n = 35$, Lethbridge $n = 33$, Medicine Hat $n = 22$) of all respondents from all health regions agreed or strongly agreed. More than 80% (Grande Prairie $n = 30$, Fort MacMurray $n = 15$, Red Deer $n = 35$, Lethbridge $n = 33$, Medicine Hat $n = 22$) of respondents from the five health regions disagreed/strongly disagreed that the government should give cash incentive to

families who grant consent. One hundred percent of respondents from four out of five health regions (Grande Prairie $n = 30$, Fort MacMurray $n = 15$, Red Deer $n = 35$, Medicine Hat $n = 22$) agreed/strongly agreed with organ donation while the fifth health region (Lethbridge $n = 33$) demonstrated greater than 94% agreement. No significant differences were observed among the five different health regions for the above attitude items.

Table 16

Factors Affecting Respondents' Attitudes of Organ Donation and Transplantation: Age

Attitude Statements	Responses (N = 135)														
	26 – 39 years (N = 63)					40 – 53 years (N = 66)					54 – 67 years (N = 4)				
	SA	A	D	SD	U	SA	A	D	SD	U	SA	A	D	SD	U
Health providers accept brain death criteria.	6	39	7	1	10	12	44	6		4		4			
Brain death is difficult to explain to families	14	34	13	2		20	26	16	3	1		3	1		
Procurement should be responsibility of physicians	9	30	19	3	2	9	33	20	1	3	1	3			
Physicians who certify brain death should not be involved in removal/transplantation	18	21	11	5	8	31	22	9		4	2	1	1		
Donor medical protocols conflict with procedures for protecting transplantable organs.	4	30	10	2	17	5	22	14	5	19	1	1	2		
Donation helps families grieve.	4	45	1	1	11	13	41	2	1	9	1	3			
Public is informed about donation.		2	43	14	4		7	37	15	7		1	3		
Procurement teams effectively educate professionals regarding procurement.	1	16	30	12	4	2	20	28	9	7			3		
Procurement teams treat donors with respect.	14	28	2		19	27	30	2	1	6	1	3			
I approve of organ donation.	43	20				42	22	1	1		3	1			
The donor may appear disfigured at time of funeral	1	4	33	18	7		5	25	29	7			2	2	
Donor families should receive payment for the donation		3	29	28	3		2	24	37	3			1	3	
Media should routinely remind public about need of donation	26	35	1		1	34	27	1	1	3	2	2			
Presumed consent should be law.	5	7	27	18	6	5	8	31	13	9		1	3		
Brain death criteria should be law	11	27	11	4	10	13	28	15	2	8		2	1		1
Physicians should receive donor evaluation fee	3	18	25	13	4	3	19	23	17	4		3	1		
Physicians should receive fee for brain death evaluations	7	21	23	11	1	6	23	21	12	4	1	3			
Nursing staff should receive extra financial compensation for participating in donation.	1	10	29	20	3	1	8	36	18	3		2	2		
Donor families should receive tax credits	3	8	26	19	7	1	5	33	17	10			1	1	2
Gov't should give cash incentives to families who grant consent	1	3	26	28	5	1	1	32	26	6			3	1	
Health institutions should participate in organ procurement	25	31	4		3	31	25	8		2	1	3			
Health institutions should have protocols to evaluate comatose, ventilator-dependent patients by brain death criteria	24	29	5	1	4	22	37	5		2	1	3			
Health institutions should have protocols to evaluate brain dead patients for donation	23	34	4		2	21	34	7	2	2	1	3			
Organ recovery is time consuming	17	24	12		9	15	32	12	1	6	1	2	1		

Note: SA = Strongly Agree, A = Agree, D = Disagree, SD = Strongly Disagree, U = Unsure

Table 17

Factors Affecting Respondents' Attitudes of Organ Donation and Transplantation: Years of Experience

	Responses (N = 135)															
	1 – 14 years (N = 57)					15 – 29 years (N = 70)					30 – 44 years (N = 7)					
Attitude Statements	SA	A	D	SD	U	SA	A	D	SD	U	SA	A	D	SD	U	p
Health providers accept brain death criteria	6	32	9	1	9	12	49	4		5		7				125
Brain death is difficult to explain to families	12	32	11	2		21	28	17	3	1	2	3	2			813
Procurement should be responsibility of physicians	7	34	12	2	2	10	31	24	2	3	2	2	3			615
Physicians who certify brain death should not be involved in removal/transplantation.	20	17	10	4	6	28	26	9	1	6	3	2	2			678
Donor medical protocols conflict with procedures for protecting transplantable organs.	3	24	12	1	17	5	28	11	6	19	2	1	3		1	151
Donation helps families grieve.	3	38	1	2	12	14	46	2		8	1	6				172
Public is informed about donation.		2	37	14	4		6	43	15	6		2	4		1	257
Procurement teams effectively educate professionals regarding procurement.	1	15	26	11	4	1	20	32	10	7	1	1	4		1	464
Procurement teams treat donors with respect.	12	26	2	1	16	27	32	2		9	3	4				234
I approve of organ donation.	36	21				48	20		1	1	4	3				817
The donor may appear disfigured at time of funeral		5	28	16	8	1	4	29	30	6			4	3		636
Donor families should receive payment for the donation		4	25	26	2		1	25	40	4			4	2	1	327
Media should routinely remind public about need of donation	24	29	1	1	2	35	32	1		2	3	4				963
Presumed consent should be law	6	8	22	15	6	3	8	35	16	8	1		5		1	535
Brain death criteria should be law.	9	27	10	3	8	14	26	17	3	10	1	4			2	755
Physicians should receive donor evaluation fee.	3	18	21	12	3	3	19	26	17	5		3	3	1		979
Physicians should receive fee for brain death evaluations.	6	21	19	10	1	6	22	25	13	4	2	4	1			486
Nursing staff should receive extra financial compensation for participating in donation.	1	11	23	19	3	1	7	41	19	2		2	4		1	302
Donor families should receive tax credits	3	8	20	20	6		5	37	16	12	1		3	1	2	068
Gov't should give cash incentives to families who grant consent	1	3	22	25	6		1	35	29	5	1		5	1		063
Health institutions should participate organ procurement	19	29	6		3	36	25	6		3	2	5				335
Health institutions should have protocols to evaluate comatose, ventilator-dependent patients by brain death criteria	17	30	5	1	4	28	36	5		1	2	4			1	553
Health institutions should have protocols to evaluate brain dead patients for donation	19	30	6		2	24	37	5	2	2	2	4			1	736
Organ recovery is time consuming	13	25	12		6	19	30	10	1	10	1	3	3			671

Note. SA = Strongly Agree, A = Agree, D = Disagree, SD = Strongly Disagree, U = Unsure

Table 18

Factors Affecting Respondents' Attitudes of Organ Donation and Transplantation: Practice Area

	Responses (N = 135)															
	Emergency (N = 53)					ICU/CCU (N = 56)					Other (N = 21)					
Attitude Statements	SA	A	D	SD	U	SA	A	D	SD	U	SA	A	D	SD	U	p
Health providers accept brain death criteria	6	32	6		9	8	38	5	1	4	3	15	2		1	719
Brain death is difficult to explain to families	11	26	13	2	1	17	27	10	2		6	9	5	1		916
Procurement should be responsibility of physicians.	7	21	19	3	3	7	34	13	1	1	5	8	7		1	320
Physicians who certify brain death should not be involved in removal/transplantation	19	16	11	1	6	22	17	9	3	5	9	10		1	1	466
Donor medical protocols conflict with procedures for protecting transplantable organs	4	22	12	2	13	5	22	10	2	17	1	7	2	3	7	604
Donation helps families grieve.	9	32	2	1	8	6	41		1	8	2	14	1		4	793
Public is informed about donation		4	34	11	4		3	36	14	3		2	12	3	4	559
Procurement teams effectively educate professionals regarding procurement.	1	15	19	13	5	1	15	27	7	6	1	6	12	1	1	480
Procurement teams treat donors with respect.	22	21	1		9	13	25	3	1	14	6	13			2	271
I approve of organ donation.	35	17			1	37	18		1		13	8				807
The donor may appear disfigured at time of funeral		3	23	20	7	1	3	24	21	7		3	11	7		600
Donor families should receive payment for the donation		3	19	28	3		1	22	30	3		1	11	8	1	812
Media should routinely remind public about need of donation	27	23	1	1	1	26	27	1		2	8	12			1	902
Presumed consent should be law.	4	4	24	14	7	1	11	26	12	6	4	1	11	4	1	124
Brain death criteria should be law.	13	19	11	5	5	8	24	12	1	11	2	11	4		4	244
Physicians should receive donor evaluation fee	5	16	19	10	3	1	12	23	16	4		10	7	3	1	226
Physicians should receive fee for brain death evaluations	8	19	16	9	1	1	17	22	12	4	4	8	7	2		148
Nursing staff should receive extra financial compensation for participating in donation	1	7	29	14	2	1	7	29	17	2		5	9	5	2	870
Donor families should receive tax credits	2	4	21	14	12	1	7	25	18	5	1	2	12	4	2	511
Gov't should give cash incentive families who grant consent	1	1	23	21	7	1	2	28	23	2		1	9	9	2	834
Health institutions should participate in organ procurement	22	25	4		2	29	21	5		1	4	11	3		3	090
Health institutions should have protocols to evaluate comatose, ventilator-dependent patients by brain death criteria.	21	28	2		2	21	27	6	1	1	4	13	1		3	192
Health institutions should have protocols to evaluate brain dead patients for donation.	18	28	6	1		21	29	3	1	2	4	13	1		3	159
Organ recovery is time consuming	10	25	11		7	15	23	10	1	6	6	8	4		3	936

Note: SA = Strongly Agree; A = Agree; D = Disagree; SD = Strongly Disagree; U = Unsure

Table 19A

Factors Affecting Respondents' Attitudes of Organ Donation and Transplantation: Health Region

Attitude Statements	Responses (N = 80)															
	Grande Prairie (N = 30)					Fort MacMurray (N = 15)					Red Deer (N = 35)					p
	SA	A	D	SD	U	SA	A	D	SD	U	SA	A	D	SD	U	
Health providers accept brain death criteria	8	19	2		1	2	11				2	23	4		6	480
Brain death is difficult to explain to families	7	18	5			6	6	1	2		10	11	13		1	132
Procurement should be responsibility of physicians.	5	12	10	1	2	1	7	6	1		3	22	8	1	1	888
Physicians who certify brain death should not be involved in removal/transplantation	10	10	6	2	2	8	3	2		2	9	14	6	2	4	928
Donor medical protocols conflict with procedures for protecting transplantable organs	4	10	5	4	7		10	2	1	2	1	16	5		13	.030*
Donation helps families grieve.	1	22	1	1	5	4	8			3	2	27	1		4	496
The public is informed about donation.		3	21	4	2			8	7			2	25	6	2	331
Procurement teams effectively educate professionals re. procurement	1	11	9	5	4	1	3	5	6			6	24	4	1	.041*
Procurement teams treat donors with respect.	8	17			5	8	4	1		2	5	21			9	053
I approve of organ donation.	22	8				10	5				22	13				683
The donor may appear disfigured at time of funeral	1	2	11	12	4			7	8			2	20	9	4	339
Donor families should receive payment for the donation		1	14	15				5	10			1	16	14	4	286
Media should routinely remind public about need of donation	14	14		1	1	9	6				12	21	1		1	768
Presumed consent should be law	3	2	18	6	1	3		4	6	2	1	5	17	8	4	318
Brain death criteria should be law	5	13	4	1	7	9	2	3	1		4	19	7	2	3	.029*
Physicians should receive donor evaluation fee	2	10	13	3	2	1	4	5	5		1	14	13	4	3	152
Physicians should receive fee for brain death evaluations	8	7	11	2	2	1	5	3	6		1	17	13	2	2	.014*
Nursing staff should receive extra financial compensation for participating in donation		5	18	6	1		2	6	7		1	5	20	7	2	522
Donor families should receive tax credits	1	2	14	7	6	1		8	4	2	1	7	13	8	6	619
Gov't should give cash incentives to families who grant consent	1		15	12	2			7	7	1	1	2	16	13	3	843
Health institutions should participate in organ procurement	10	15		2	3	10	4		1		12	21		1	1	084
Health institutions should have protocols to evaluate comatose, ventilator-dependent patients by brain death criteria	9	16	1		4	9	5	1			11	22	1	1		071
Health institutions should have protocols to evaluate brain dead patients for donation	8	18	2		2	10	4		1		11	18	5		1	134
Organ recovery is time consuming	5	17	5		3	3	5	4	1	2	7	17	6		4	237

Note. SA = Strongly Agree; A = Agree; D = Disagree; SD = Strongly Disagree; U = Unsure

* = p ≤ .05

Table 19B

Factors Affecting Respondents' Attitudes of Organ Donation and Transplantation: Health Region

	Responses (N = 55)											
	Lethbridge (N = 33)					Medicine Hat (N = 22)						
Attitude Statements	SA	A	D	SD	U	SA	A	D	SD	U	p	
Health providers accept brain death criteria.	4	21	3	1	4	2	14	4		2	.480	
Brain death is difficult to explain to families.	8	14	9	2		4	14	3	1		.132	
Procurement should be responsibility of physicians.	7	14	10	1	1	3	13	5		1	.888	
Physicians who certify brain death should not be involved in removal/transplantation.	15	11	4	1	2	9	7	4		2	.928	
Donor medical protocols conflict with procedures for protecting transplantable organs.	4	7	12	2	8	1	10	2		8	.030*	
Donation helps families grieve.	8	17	1	1	6	3	16	1		2	.496	
The public is informed about donation.		4	17	7	5		1	14	5	2	.331	
Procurement teams effectively educate professionals re. procurement.		10	13	6	4	1	6	12		3	.041*	
Procurement teams treat donors with respect.	10	15	3	1	4	11	6			5	.053	
I approve of organ donation.	18	13		1	1	17	5				.683	
The donor may appear disfigured at time of funeral.		4	11	12	6		1	12	9		.339	
Donor families should receive payment for the donation.		1	15	16	1		2	4	14	2	.286	
Media should routinely remind public about need of donation.	15	15	1		2	13	9				.768	
Presumed consent should be law.	2	5	12	8	6	1	4	12	3	2	.318	
Brain death criteria should be law.	4	16	7	1	5	3	7	6	1	5	.029*	
Physicians should receive donor evaluation fee.	2	7	14	10			5	5	8	4	.152	
Physicians should receive fee for brain death evaluations.	4	11	11	7			7	7	6	2	.014*	
Nursing staff should receive extra financial compensation for participating in donation.	1	5	14	13			3	10	6	3	.522	
Donor families should receive tax credits.		1	17	12	3	1	3	8	7	3	.619	
Gov't should give cash incentives to families who grant consent.			13	17	3		2	11	7	2	.843	
Health institutions should participate in organ procurement.	15	10	7		1	11	9	1		1	.084	
Health institutions should have protocols to evaluate comatose, ventilator-dependent patients by brain death criteria.	11	16	6			8	11	1		2	.071	
Health institutions should have protocols to evaluate brain dead patients for donation.	9	19	4	1		8	12			2	.134	
Organ recovery is time consuming.	14	10	4		5	4	10	6		2	.237	

Note. SA = Strongly Agree; A = Agree; D = Disagree; SD = Strongly Disagree; U = Unsure

* = $p < .05$

Personal Involvement in Organ Donation and Transplantation

Respondents' personal involvement in organ donation and transplantation were obtained through 9 items using a five-point Likert scale (A = very, B = somewhat, C = not very, D = not at all, E = don't know) (refer to Table 20 and Table 21) and 4 items using a yes/no/don't know scale (refer to Table 22 and Table 23). Six further items were included, two items using a five-point Likert scale (A = very, B = often, C = sometimes, D = rarely, E = don't know), 1 item using a six-point Likert scale (A = Always, B = often, C = sometimes, D = rarely, E = definitely not, F = don't know) and two items requesting respondent select the best response (see Table 24).

Ninety-three percent of the total respondents ($n = 133$) strongly or very strongly supported organ donation, which corresponded with the responses from each health care professional. Registered nurses at 92.8% ($n = 97$), physicians at 90.6% ($n = 32$), and administrators at 100% ($n = 5$) all very strongly or strongly supported organ donation. Eighty-four (62.2%) of the total respondents were very comfortable or somewhat comfortable in identifying a patient as a potential donor. Fifty-eight (59.8%) registered nurses, 23 (71.9%) physicians, and 3 (60%) administrators were very comfortable or somewhat comfortable in identifying a patient as a potential donor. No statistically significant differences were found among health care professionals in the above items.

Fifty-four percent ($n = 135$) of the total respondents were very reluctant or somewhat reluctant to approach families about organ donation. Health care professionals differed significantly in that 63% ($n = 97$) of registered nurses and 60% ($n = 3$) of administrators were very reluctant or somewhat reluctant to approach families about

organ donation, while 69% ($\underline{n} = 32$) of physicians were not very or not at all reluctant to approach families about organ donation ($\chi^2 = 22.98$, $p = .003$).

Ninety-nine (73%) total respondents indicated they likely would not or likely would not at all limit their involvement in organ donation because of the time involved in the process. Similar results were shown between health care professionals with registered nurses at 77.3% ($\underline{n} = 97$), physicians at 65.6% ($\underline{n} = 32$) and administrators at 60% ($\underline{n} = 5$) responding they would likely not or not at all limit their involvement organ donation because of the time involved in the process.

When respondents were asked how appropriate it was to involve organ procurement organization (OPO) personnel (non-physician) in clinical decisions for a patient being assessed for brain death criteria, 72.6% ($\underline{n} = 135$) stated it was very appropriate/somewhat appropriate to have the OPO personnel involved. Amongst the health care professionals, 74.2% ($\underline{n} = 97$) of registered nurses and 75% ($\underline{n} = 32$) of physicians indicated it was very appropriate/somewhat appropriate to involve OPO personnel (non-physician) in decisions regarding clinical issues for a patient being assessed for brain death criteria. Administrators demonstrated a division between respondents with 40% ($\underline{n} = 5$) believing it was very appropriate to involve OPO personnel (non-physician) in clinical decision making for a patient being assessed for brain death criteria, while 40% ($\underline{n} = 5$) believed it was not very or not at all appropriate. No statistically significant differences among health care professionals were noted for personal involvement.

Fifty-four percent ($\underline{n} = 134$) of total respondents were not very or not at all aware of the criteria that makes a terminally ill patient a possible candidate for organ donation.

Fifty-eight percent ($\underline{n} = 97$) of registered nurses were not very or not at all aware of the criteria that makes a terminally ill patient a possible candidate for organ donation, while 53.1% ($\underline{n} = 32$) of physicians, and 60% ($\underline{n} = 5$) of administrators were very or somewhat aware of the criteria that makes a terminally ill patient a possible candidate for organ donation. There were no statistically significant differences among health care professional respondents. Seventy-two percent ($\underline{n} = 134$) of the total respondents found organ procurement activities very or somewhat emotionally demanding. Sixty-nine percent ($\underline{n} = 97$) of registered nurses, 81.3% ($\underline{n} = 32$) of physicians, and 80% ($\underline{n} = 5$) of administrators found organ procurement activities very or somewhat emotionally demanding.

One hundred and eleven (82.8%) of the total respondents have discussed their feelings about organ donation with their families. Eighty-four (86.6%) registered nurses and twenty-five (78.1%) physicians have discussed their feelings about organ donation with their families, while 3 (60%) administrators have not ($\chi^2 = 7.92, p = .019$). Eighty-eight percent ($\underline{n} = 134$) of the total respondents would consider donating their organs at the time of their death. Eighty-eight percent ($\underline{n} = 97$) of registered nurses and 90.6% ($\underline{n} = 32$) of physicians would consider donating their organs at the time of their death, while 60% ($\underline{n} = 5$) of administrators agreed, and 40% ($\underline{n} = 5$) didn't know. No statistically significant differences among the three health care professionals were noted.

Of the total respondents, 66.2% ($\underline{n} = 133$) had signed an organ donor card; 64% ($\underline{n} = 97$) of registered nurses, 75% ($\underline{n} = 32$) of physicians, and 40% ($\underline{n} = 5$) of administrators. One hundred and eleven (83.5%) of the total respondents indicated they would consider giving permission to have a family member's organs donated at the time

of death. Similarly, 75 (79.4%) registered nurses, 29 (90.6%) physicians, and all 5 (100%) administrators would consider giving permission to have a family member's organs donated at the time of death.

When respondents were asked who should have the responsibility of explaining to a family their relative is brain-dead, 71% ($n = 85$) of registered nurses, 77% ($n = 31$) of physicians, and 100% ($n = 5$) of administrators indicated the family physician should have this responsibility (refer to Table 24). When asked who most frequently first recognizes a patient is/will become a donor, registered nurses were equally divided in their opinions, with 45% ($n = 89$) believing a nurse is the first individual who most frequently recognizes a patient is/will become a donor, and 49.4% ($n = 89$) believing the physician does. Among physicians, 69% ($n = 32$) believe a physician first recognizes a patient is/will become a donor, while among administrators, 80% ($n = 4$) believe the family of the patient first recognizes a patient is/will become a donor. No statistically significant differences were found among the three health care professionals.

Among the three health care professionals, 42% ($n = 97$) of registered nurses always, often, or sometimes liked becoming involved in declaring brain death; 34% ($n = 32$) of physicians often or sometimes liked becoming involved in declaring brain death; and of the administrators, 60% ($n = 5$) definitely did not like becoming involved in declaring brain death ($\chi^2 = 18.48$, $p = .047$). When respondents were asked how frequently they refer brain dead patients to an organ procurement agency, 70.5% ($n = 95$) of registered nurses, 59.4% ($n = 32$) of physicians, and 80% ($n = 5$) of administrators rarely do so. Statistically significant differences were not observed among the three health care professionals.

Three personal involvement questions asked respondents the number of patients (trauma patients, transplant recipients and organ donors) they had cared for in the past year and a fourth question asked how many families they had approached for consent for donation in the past year (refer to Table 25). When asked how many patients they had cared for in the last year who died with a head trauma, CVA, drowning, primary brain tumor, 64.9% ($\underline{n} = 97$) of registered nurses, 68.7% of physicians and 60% ($\underline{n} = 5$) of administrators had cared for 1 to 9 patients with the above injuries. When respondents were asked how many transplant recipients they had cared for, greater than 60% ($\underline{n} = 97$) of registered nurses and administrators ($\underline{n} = 5$), and 46.9% ($n = 32$) of physicians had not cared for any transplant recipients. Thirty-five percent ($\underline{n} = 97$) of registered nurses and 46.9% ($\underline{n} = 32$) of physicians had cared for 1 to 9 transplant recipients.

The third question respondents were asked was how many families had they approached for consent for organ donation in the past year. Eighty of 98 registered nurse (81.6%), 16 of 32 physicians (50%) and 1 of 5 administrators (20%) had not approached any family members for consent for organ donation in the past year. Sixteen physician (50%) and 4 administrators (80%) had approached 1 to 9 families for consent for organ donation while 18 registered nurses (18.4%) had approached 1 to 4 families. When asked how many organ donors they had been involved with in the past year, greater than 60% of all health care professionals ($\underline{n} = 134$) had not been involved with any donors in the past year. Twenty-nine percent ($\underline{n} = 98$) of registered nurses and 32.2% of physicians ($\underline{n} = 31$) had been involved with 1 to 9 organ donors in the past year while 40% ($\underline{n} = 2$) administrators had been involved with 1 to 4. No statistically significant differences were found among the three health care professionals.

Table 20

Total Respondents' Personal Involvement In Organ Donation and Transplantation

	Responses (%)						
Personal Involvement Statements	V	SW	NV	N	DK	<u>N</u>	<u>Mode</u>
How strongly do you support organ donation?	70 (52.6)	54 (40.6)	7 (5.3)	1 (0.8)	1 (0.8)	133	1
How comfortable are you about identifying a patient as a potential donor?	35 (25.9)	49 (36.3)	35 (25.9)	10 (7.4)	6 (4.4)	135	2
How reluctant are you to approach families about organ donation?	15 (11.1)	58 (43.0)	35 (25.9)	19 (14.1)	8 (5.9)	135	2
How likely would you not be involved in donation because of the time involved?	6 (4.4)	22 (16.3)	51 (37.8)	48 (35.6)	8 (5.9)	135	3
While caring for a brain dead patient, do you think the family would view a conflict of interest if you approached them about donation?	4 (3.0)	41 (30.4)	45 (33.3)	32 (23.7)	13 (9.6)	135	3
During brain death assessment, how appropriate is it to involve the OPO in decisions regarding clinical issues?	69 (51.1)	29 (21.5)	12 (8.9)	12 (8.9)	13 (9.6)	135	1
How aware are you of criteria that make a possible candidate for organ donation?	11 (8.2)	45 (33.6)	46 (34.3)	27 (20.1)	5 (3.7)	134	3
How emotionally demanding do you find organ procurement activities?	47 (35.1)	50 (37.3)	9 (6.7)	3 (2.2)	25 (18.7)	134	2
How much in favor are you for providing payment to donor families?	1 (0.7)	10 (7.5)	29 (21.6)	85 (63.4)	9 (6.7)	134	4

Note. V = Very; SW = Somewhat; NV = Not very; N = Not at all; DK = Don't Know

OPO = Organ Procurement Organization

Table 21

Nurses, Physicians and Administrators Personal Involvement In Organ Donation and Transplantation

	Responses (%)															
	Registered Nurses (N = 97)					Physicians (N = 32)					Administrators (N = 5)					
Personal Involvement Statements	V	SW	NV	N	DK	V	SW	NV	N	DK	V	SW	NV	N	DK	p
Strongly do you support donation	52 (53.6)	38 (39.2)	4 (4.1)	1 (1.0)	1 (1.0)	16 (50.0)	13 (40.6)	3 (9.4)			2 (40.0)	3 (60.0)				.934
Comfortable identifying donor?	28 (28.9)	30 (30.9)	28 (28.9)	7 (7.2)	5 (5.2)	6 (18.8)	17 (53.1)	5 (15.6)	3 (9.4)	1 (3.1)	1 (20.0)	2 (40.0)	2 (40.0)			.504
Reluctance approaching families about donation?	15 (15.5)	46 (47.4)	23 (23.7)	7 (7.2)	7 (7.2)		9 (28.1)	11 (34.4)	11 (34.4)	1 (3.1)		3 (60.0)	1 (20.0)	1 (20.0)		.003*
Likely not involved in donation because of time involved?	3 (3.1)	13 (13.4)	38 (39.2)	37 (38.1)	7 (7.2)	3 (9.4)	7 (21.9)	12 (37.5)	9 (28.1)	1 (3.1)		2 (40.0)	1 (20.0)	2 (40.0)		.499
Caring for brain dead patient, would family view conflict of interest if approached about donation?	3 (3.1)	30 (30.9)	30 (30.9)	24 (24.7)	11 (11.3)	1 (3.1)	10 (31.3)	13 (40.6)	6 (18.8)	2 (6.3)		1 (20.0)	2 (40.0)	2 (40.0)		.923
During brain death assessment, how appropriate to involve OPO in clinical issues?	51 (52.6)	21 (21.6)	9 (9.3)	8 (8.2)	9 (9.3)	16 (50.0)	8 (25.0)	2 (6.3)	3 (9.4)	3 (9.4)	2 (40.0)		1 (20.0)	1 (20.0)	1 (20.0)	.883
Aware of criteria that make patient candidate for donation?	6 (6.2)	30 (30.9)	34 (35.1)	22 (22.7)	5 (5.2)	5 (15.6)	12 (37.5)	10 (31.3)	5 (15.6)			3 (60.0)	2 (40.0)			.421
Procurement activities are emotionally demanding?	34 (35.1)	33 (34.0)	6 (6.2)	2 (2.1)	22 (22.7)	10 (31.3)	16 (50.0)	3 (9.4)		3 (9.4)	3 (60.0)	1 (20.0)		1 (20.0)		.063
Favor providing payment to donor families?	1 (1.0)	5 (5.2)	22 (22.7)	61 (62.9)	8 (8.2)		4 (12.5)	6 (18.8)	21 (65.6)	1 (3.1)		1 (20.0)	1 (20.0)	3 (60.0)		.787

Note. V = Very, SW = Somewhat, NV = Not very, N = Not at all, DK = Don't Know

OPO = Organ Procurement Organization

* = $p \leq .05$

Table 22

Total Respondents' Personal Involvement in Organ Donation and Transplantation

	Responses (%)			N
Personal Involvement Statements	Yes	No	Don't Know	
Have you discussed your feelings about organ donation with your family?	111 (82.8)	23 (17.2)		134
Would you consider donating your organs at the time of your death?	118 (88.1)	5 (3.7)	11 (8.2)	134
Have you signed an organ donor card?	88 (66.2)	45 (33.8)		133
Would you consider giving permission to have a family member's organs donated at the time of death?	111 (83.5)	4 (3.0)	18 (13.5)	133

Table 23

Nurses, Physicians and Administrators Personal Involvement In Organ Donation and Transplantation

	Responses (%)									
	Registered Nurses (N = 97)			Physicians (N = 32)			Administrators (N = 5)			
Personal Involvement Statements	Yes	No	Don't Know	Yes	No	Don't Know	Yes	No	Don't Know	p
Discussed your feelings about donation with your family?	84 (86.6)	13 (13.4)		25 (78.1)	7 (21.9)		2 (40.0)	3 (60.0)		.019*
Consider donating your organs at time of your death?	86 (88.7)	5 (5.2)	6 (6.2)	29 (90.6)		3 (9.4)	3 (60.0)		2 (40.0)	.059
Have you signed an organ donor card?	62 (63.9)	34 (35.1)		24 (75.0)	8 (25.0)		2 (40.0)	3 (60.0)		.253
Consider giving permission to have family member's organs donated at time of death?	77 (79.4)	4 (4.1)	15 (15.5)	29 (90.6)		3 (9.4)	5 (100.0)			.490

Note. * = $p \leq .05$

Table 24

Nurses, Physicians and Administrators Personal Involvement in Organ Donation and Transplantation

Personal Involvement Statements	Nurses	Percent (%)	Physicians	Percent (%)	Administrators	Percent (%)	p
Who should have the responsibility of explaining to a family that their relative is brain-dead?	<u>N</u> = 85		<u>N</u> = 31		<u>N</u> = 5		
Neurosurg/Neurologist	12	14.1	2	6.5			.747
Primary physician	60	70.6	24	77.4	5	100.0	
Family physician	7	8.2	2	6.5			
Nurse caring for patient							
Other	6	7.1	3	9.7			
Don't know							
Who most frequently 1st recognizes a patient is/will become a donor?	<u>N</u> = 89		<u>N</u> = 32		<u>N</u> = 5		
Family of patient	4	4.5	2	6.3			.260
Nurse	40	44.9	8	25.0	4	80.0	
Physician	44	49.4	22	68.8	1	20.0	
Chaplain							
Other	1	1.1					
Who most frequently 1st approaches the family of a potential donor?	<u>N</u> = 92		<u>N</u> = 31		<u>N</u> = 5		
Nurse	18	19.6	2	6.5	2	40.0	.583
Physician	61	66.3	22	71.0	2	40.0	
Social worker	2	2.2	1	3.2			
Chaplain							
OPO representative	1	1.1					
Other							
Don't know	10	10.9	6	19.4	1	20.0	
Do you like to become involved in declaring brain death?	<u>N</u> = 97		<u>N</u> = 32		<u>N</u> = 5		
Always	10	10.3	3	9.4			.047*
Often	2	2.1					
Sometimes	29	29.9	8	25.0	1	20.0	
Rarely	21	21.6	13	40.6			
Definitely not	15	15.5	8	25.0	3	60.0	
Don't know	20	20.6			1	20.0	
How frequently do you refer brain dead patients to an organ procurement agency?	<u>N</u> = 95		<u>N</u> = 32		<u>N</u> = 5		
Very frequently	3	3.2					.540
Often	2	2.1	1	3.1			
Sometimes	13	13.7	10	31.3	1	20.0	
Rarely	67	70.5	19	59.4	4	80.0	
Don't know	10	10.5	2	6.3			
How frequently do you express concern about your legal liability in the organ procurement process?	<u>N</u> = 97		<u>N</u> = 32		<u>N</u> = 5		
Very frequently	2	2.1					.293
Often	4	4.2					
Sometimes	12	12.4	5	15.6	1	20.0	
Rarely	49	50.5	23	71.9	4	80.0	
Don't know	30	30.9	4	12.5			

Note. CVA = Cerebral Vascular Accident; OPO = Organ Procurement Organization

* = $p \leq .05$

Table 25

Nurses, Physicians and Administrators Personal Involvement in Organ Donation and Transplantation

Personal Involvement Statements	Nurses	Percent (%)	Physicians	Percent (%)	Administrators	Percent (%)	p
In the last year, how many patients who died of head trauma, CVA, drowning, primary brain tumor did you care for?	<u>N = 97</u>		<u>N = 32</u>		<u>N = 5</u>		
0	17	17.5	4	12.5	1	20.0	.889
1 to 4	42	43.3	17	53.1	1	20.0	
5 to 9	21	21.6	5	15.6	2	40.0	
10 to 14	10	10.3	5	15.6	1	20.0	
15 to 19	5	5.2	1	3.1			
20 to 30	2	2.1					
In the last year, how many transplant recipients did you care for?	<u>N = 97</u>		<u>N = 32</u>		<u>N = 5</u>		
0	59	60.8	15	46.9	3	60.0	.302
1 to 4	33	34.0	13	40.6	1	20.0	
5 to 9	1	1.0	2	6.3			
10 to 14	3	3.1	1	3.1	1	20.0	
15 to 19	1	1.0					
More than 30			1	3.1			
How many families have you approached for consent for organ donation in the past year?	<u>N = 98</u>		<u>N = 32</u>		<u>N = 5</u>		
0	80	81.6	16	50.0	1	20.0	.000*
1 to 4	18	18.4	15	46.9	3	60.0	
5 to 9			1	3.1	1	20.0	
10 to 14							
15 to 19							
20 to 30							
More than 30							
How many organ donors were you involved with in the past year?	<u>N = 98</u>		<u>N = 31</u>		<u>N = 5</u>		
0	70	71.4	21	67.7	3	60.0	.873
1 to 4	27	27.6	9	29.0	2	40.0	
5 to 9	1	1.0	1	3.2			
10 to 14							
15 to 19							
20 to 30							
More than 30							

Note. CVA = Cerebral Vascular Accident

* = $p \leq .05$

Respondents' personal involvement in organ donation and transplantation was further evaluated in relation to age, years of experience, practice area, and health region (refer to Tables 26 to 33B). Thirteen questions were asked, 9 in a 5-point Likert response (A = very, B = somewhat, C = not very, D = not at all, E = don't know) and 4 in a yes/no/don't know response.

Greater than 70% of the total respondents in the three age categories (26-39 years $\underline{n} = 63$, 40-53 years $\underline{n} = 66$, 54-67 years $\underline{n} = 4$) responded that they strongly/very strongly support organ donation and would very likely/somewhat likely become involved in the process despite the time involved. Thirty-two (50.8%) of the total respondents 26 to 39 years of age were very comfortable/somewhat comfortable identifying a patient as a potential donor, while 48 of 66 respondents (72.7%) 40 to 53 years of age, and all (100%) of the respondents 54 to 67 years were very comfortable/somewhat comfortable identifying a patient as a potential donor. No statistically significant differences among the 3 age categories were seen. However, there was a statistically significant difference among health care professionals in approaching families about organ donation. Fifty-seven percent ($\underline{n} = 63$) of respondents in the first age category (26-39 years), and 54.5% of respondents in the second age category (40-53 years) were very/somewhat reluctant to approach families about organ donation. Seventy-five percent of respondents between 54-67 years of age were not at all reluctant to approach families about organ donation ($\chi^2 = 16.88$, $p = .031$).

Greater than 54% of respondents in the first two age categories (26-39 years $\underline{n} = 63$, 40-53 years $\underline{n} = 66$) were not very/not at all aware of the criteria that makes a patient a possible candidate for organ donation, while 100% ($\underline{n} = 4$) of respondents in the

last age category (54-67 years) were very/somewhat aware. However, the difference observed among the three age categories did not reach statistical significance.

More than 75% of all respondents in the three age categories (26-39 years $\underline{n} = 62$, 40-53 years $\underline{n} = 66$, 54-67 years $\underline{n} = 4$) have: (1) discussed their feelings about organ donation with their families, (2) considered donating their organs at the time of their death, and, (3) would consider giving permission to have a family member's organs donated at the time of their death. Greater than 65% of respondents from the first two age categories (26-39 years $\underline{n} = 63$, 40-53 years $\underline{n} = 66$) have signed their organ donor cards, while 50% ($\underline{n} = 4$) of respondents in the last age category (54-67 years $\underline{n} = 4$) have signed. No statistically significant differences between the three age categories were seen.

More than 85% ($\underline{n} = 134$) of respondents in the three categories of years of experience (1-14 years $\underline{n} = 57$, 15-29 years $\underline{n} = 70$, 30-44 years $\underline{n} = 7$) strongly/somewhat strongly support organ donation. Greater than 67% of respondents in all three categories of years of experience (1-14 years $\underline{n} = 57$, 15-29 years $\underline{n} = 70$, 30-44 years $\underline{n} = 7$) agreed they would likely/somewhat likely continue being involved in organ donation despite the time involved in the process.

Forty-nine percent ($\underline{n} = 57$) of respondents with 1-14 years of experience and 63% ($\underline{n} = 70$) with 15-29 years of experience were not very/not at all aware of the criteria that makes a patient a candidate for organ donation, while respondents with 30-44 years of experience demonstrated that 85.7% ($\underline{n} = 7$) were very/somewhat aware of the criteria that makes a patient a candidate for organ donation ($\chi^2 = 16.93$, $p = .031$). Significant differences were found among respondents in the three categories of years of experience

in relation to procurement activities being emotionally demanding. More than 35% of respondents in the first two categories of years of experience (1-14 years $\underline{n} = 57$, 15-29 years $\underline{n} = 70$) found organ procurement activities somewhat emotionally demanding, while a greater percentage in the last category of years of experience at 57.1% (30-44 years, $n = 7$) found organ procurement activities somewhat emotionally demanding ($\chi^2 = 27.99$, $p = .000$).

Forty-four of 56 respondents (78.6%) with 1-14 years of experience and sixty two of 70 respondents (88.6%) with 15-29 years of experience have discussed their feelings about organ donation with their families, while only 4 of 7 respondents (57.1%) with 30-44 years of experience had discussed their feelings about donation with their families. No statistically significant differences were found among the three categories of years of experience. More than 71% of respondents from all three categories of years of experience (1-14 years $\underline{n} = 56$, 15-29 years $\underline{n} = 70$, 30-44 years $\underline{n} = 7$) would consider donating their organs at the time of their death, while more than 82% of all respondents (1-14 years $\underline{n} = 56$, 15-29 years $\underline{n} = 70$, 30-44 years $\underline{n} = 7$) would consider giving permission to have their family member's organs donated at the time of their death. Thirty-five (62.5%) respondents with 1-14 years of experience and fifty (71.4%) respondents with 15-29 years of experience have signed their organ donor card, while only 2 (28.6%) with 30-44 years of experience have. Despite this, there were no statistically significant differences between the three categories of years of experience.

Greater than 62% of all respondents from all three practice areas (Emergency $\underline{n} = 52$, ICU/CCU $\underline{n} = 56$, Other $\underline{n} = 21$) found organ procurement activities very or somewhat emotionally demanding. Despite this, more than 90% of all respondents

(Emergency $n = 52$, ICU/CCU $n = 56$, Other $n = 21$) very strongly/strongly support organ donation. More than 54% of respondents ($n = 52$) from the Emergency department and 62.5% of respondents ($n = 56$) from ICU/CCU were very/somewhat reluctant to approach families about organ donation while in the third category (Family Practice/Internal Medicine) 57.1% ($n = 21$) were not very or not at all reluctant to approach families about organ donation. No statistically significant differences were found among the three practice areas.

Thirty-four (65.4%) of all respondents from the Emergency department indicated they not very/not at all aware of what makes a patient a candidate for organ donation while 27 of 56 (48.2%) respondents from ICU/CCU and 10 of 21 (47.6%) from Family Practice/Internal Medicine were very aware/somewhat aware of what makes a patient a candidate for organ donation. No statistically significant differences were found among the three practice areas.

More than 83% of respondents from the first two practice areas (Emergency $n = 53$, ICU/CCU $n = 56$) have discussed their feelings about organ donation with their families, while only 61.9% (Other $n = 21$) of respondents from Family Practice & Internal Medicine have spoken to their families about organ donation ($\chi^2 = 8.27$, $p = .016$) (refer to Table 31). More than 85% (Emergency $n = 53$, ICU/CCU $n = 56$, Other $n = 21$) of all respondents from all practice areas would consider donating their organs at their death, while more than 75% (Emergency $n = 53$, ICU/CCU $n = 56$, Other $n = 21$) of respondents from all practice areas would consider giving permission to have a family member's organs donated at the time of their death. The majority of respondents

from all practice areas (Emergency, 66%, ICU/CCU, 66.1%, Other, 61.9%) have signed an organ donor card.

Responses were assessed to establish whether a difference occurred between health regions and personal involvement. Health regions differed significantly in that 22.7% ($n = 22$) of respondents from Medicine Hat, 30% ($n = 30$) of respondents from Grande Prairie, and 31.4% ($n = 35$) of respondents from Red Deer found organ procurement activities emotionally demanding while 40% of respondents from Fort MacMurray ($n = 15$) and 48.5% of respondents from Lethbridge ($n = 33$,) found organ procurement activities emotionally demanding ($\chi^2 = 27.27$, $p = .039$). Despite these results, greater than 82% of all respondents (Grande Prairie $n = 30$, Fort MacMurray $n = 15$, Red Deer $n = 35$, Lethbridge $n = 33$) still very strongly or somewhat strongly supported organ donation with 100% support from Medicine Hat ($n = 22$) respondents.

More than 83% of all respondents (Grande Prairie $n = 30$, Fort MacMurray $n = 15$, Lethbridge $n = 33$, Medicine Hat $n = 22$) indicated they would consider donating their organs at the time of their death. Twenty-three of 30 respondents (76.7%) from Grande Prairie, 26 of 33 respondents (78.8%) from Lethbridge, and 12 of 15 respondents (80%) from Fort MacMurray would consider giving their permission to have a family member's organs donated at the time of their death. The remaining two regions demonstrated higher numbers of respondents would consider donating their family member's organs at the time of their death, with 18 of 21 respondents (85.7%) from Medicine Hat, and 32 of 35 respondents (91.4%) from Red Deer ($\chi^2 = 16.66$, $p = .034$).

Table 26

Factors Affecting Respondents' Personal Involvement in Organ Donation and Transplantation: Age

	Responses (N = 135)															
	26 – 39 years (N = 63)					40 – 53 years (N = 66)					54 – 67 years (N = 4)					
Personal Involvement Statements	V	SW	NV	N	DK	V	SW	NV	N	DK	V	SW	NV	N	DK	p
Strongly do you support donation	34	27			1	33	25	6	1		2	1	1			.218
Comfortable identifying donor?	15	17	22	7	2	18	30	12	3	3	2	2				.187
Reluctance approaching families about donation?	9	27	13	9	5	6	30	21	7	2		1		3		.031*
Likely not involved in donation because of time involved?	2	9	23	24	5	4	13	23	23	3			3	1		.780
Caring for brain dead patient, would family view conflict of interest if approached about donation?	1	21	24	10	7	3	20	19	19	5			1	2	1	.404
During brain death assessment, how appropriate to involve OPO in clinical issues?	29	15	7	6	6	38	13	4	6	5	2	1			1	.846
Aware of criteria that make patient candidate for donation?	2	22	20	15	3	7	21	25	11	2	2	2				.059
Procurement activities are emotionally demanding?	21	20	5	1	15	26	25	4	2	9		4				.268
Favor providing payment to donor families?	1	6	13	39	3		4	15	43	4			1	2	1	.787

Note. V = Very; SW = Somewhat; NV = Not very; N = Not at all; DK = Don't Know
OPO = Organ Procurement Organization

* = $p \leq .05$

Table 27

Factors Affecting Respondents' Personal Involvement in Organ Donation and Transplantation: Age

	Responses (%)									
	26 – 39 years (N = 63)			40 – 53 years (N = 66)			54 – 67 years (N = 4)			
Personal Involvement Statements	Yes	No	Don't Know	Yes	No	Don't Know	Yes	No	Don't Know	p
Discussed your feelings about donation with your family?	51 (82.3)	11 (17.7)		55 (83.3)	11 (16.7)		3 (75.0)	1 (25.0)		.909
Consider donating your organs at time of your death?	55 (88.7)	2 (3.2)	5 (8.1)	57 (86.4)	3 (4.5)	6 (9.1)	4 (100.0)			.942
Have you signed an organ donor card?	42 (67.7)	19 (30.6)		43 (65.2)	23 (34.8)		2 (50.0)	2 (50.0)		.707
Consider giving permission to have family member's organs donated at time of death?	51 (82.3)	1 (1.6)	10 (16.1)	54 (81.8)	3 (4.5)	8 (12.1)	4 (100.0)			.716

Table 28

Factors Affecting Respondents' Personal Involvement in Organ Donation and Transplantation: Years of Experience

	Responses (N = 134)															
	1 – 14 years (N = 57)					15 – 29 years (N = 70)					30 – 44 years (N = 7)					
Personal Involvement Statements	V	SW	NV	N	DK	V	SW	NV	N	DK	V	SW	NV	N	DK	p
Strongly do you support donation.	28	24	3		1	39	26	3	1		2	4	1			.738
Comfortable identifying donor?	13	20	16	6	2	20	25	17	4	4	2	4	1			.856
Reluctance approaching families about donation?	6	25	13	9	4	9	30	21	6	4		3		4		.063
Likely not involved in donation because of time involved?	3	12	18	21	3	3	8	29	25	5		2	3	2		.814
Caring for brain dead patient, would family view conflict of interest if approached about donation?	1	17	21	11	7	3	23	24	15	5		1		5	1	.123
During brain death assessment, how appropriate to involve OPO in clinical issues?	25	14	5	6	7	42	12	7	5	4	2	3		1	1	.456
Aware of criteria that make patient candidate for donation?	2	23	17	11	3	8	17	29	15	1	1	5			1	.031*
Procurement activities are emotionally demanding?	18	20	5	1	12	28	26	4		12	1	4		2		.000*
Favor providing payment to donor families?	1	7	12	34	2		2	15	47	6		1	2	3	1	.407

Note. V = Very; SW = Somewhat; NV = Not very; N = Not at all; DK = Don't Know

OPO = Organ Procurement Organization

* = p ≤ .05

Table 29

Factors Affecting Respondents' Personal Involvement in Organ Donation and Transplantation: Years of Experience

	Responses (%)									
	1 – 14 years (N = 56)			15 – 29 years (N = 70)			30 – 44 years (N = 7)			
Personal Involvement Statements	Yes	No	Don't Know	Yes	No	Don't Know	Yes	No	Don't Know	p
Discussed your feelings about donation with your family?	44 (78.6)	12 (21.4)		62 (88.6)	8 (11.4)		4 (57.1)	3 (42.9)		.062
Consider donating your organs at time of your death?	49 (87.5)	2 (3.6)	5 (8.9)	63 (90.0)	3 (4.3)	4 (5.7)	5 (71.4)		2 (28.6)	.326
Have you signed an organ donor card?	35 (62.5)	20 (35.7)		50 (71.4)	20 (28.6)		2 (28.6)	5 (71.4)		.067
Consider giving permission to have family member's organs donated at time of death?	46 (82.1)	2 (3.6)	8 (14.3)	58 (82.9)	2 (2.9)	9 (12.9)	6 (85.7)		1 (14.3)	.988

Table 30

Factors Affecting Respondents' Personal Involvement in Organ Donation and Transplantation: Practice Area

	Responses (N = 129)															
	Emergency (N = 52)					ICU/CCU (N = 56)					Other (N = 21)					
Personal Involvement Statements	V	SW	NV	N	DK	V	SW	NV	N	DK	V	SW	NV	N	U	p
Strongly do you support donation	29	18	4		1	28	26		1		9	10	2			.334
Comfortable identifying donor?	11	23	13	3	3	20	17	14	4	1	3	7	6	3	2	.359
Reluctance approaching families about donation?	6	21	16	4	6	7	28	13	6	2	2	7	5	7		.077
Likely not involved in donation because of time involved?	2	10	20	18	3	2	6	24	20	4	2	6	5	7	1	.639
Caring for brain dead patient, would family view conflict of interest if approached about donation?	1	15	22	9	6	1	18	15	16	6	2	7	7	4	1	.456
During brain death assessment, how appropriate to involve OPO in clinical issues?	27	10	7	2	7	31	11	4	8	2	8	7	1	2	3	.211
Aware of criteria that make patient candidate for donation?	1	15	20	14	2	8	19	21	6	2	1	9	4	6	1	.120
Procurement activities are emotionally demanding?	16	22	4		10	20	22	3	2	9	9	4	2	1	5	.646
Favor providing payment to donor families?		5	13	31	3	1	2	11	36	6		3	4	14		.511

Note. V = Very; SW = Somewhat; NV = Not very; N = Not at all; DK = Don't Know
OPO = Organ Procurement Organization

Table 31

Factors Affecting Respondents' Personal Involvement in Organ Donation and Transplantation: Practice Area

	Responses (%)									
	Emergency (N = 53)			ICU/CCU (N = 56)			Other (N = 21)			p
Personal Involvement Statements	Yes	No	Don't Know	Yes	No	Don't Know	Yes	No	Don't Know	
Discussed your feelings about donation with your family?	44 (83.0)	8 (15.1)		50 (89.3)	6 (10.7)		13 (61.9)	8 (38.1)		.016*
Consider donating your organs at time of your death?	45 (84.9)	3 (5.7)	4 (7.6)	50 (89.3)	2 (3.6)	4 (7.1)	18 (85.7)		3 (14.3)	.676
Have you signed an organ donor card?	35 (66.0)	17 (32.1)		37 (66.1)	18 (32.1)		13 (61.9)	8 (38.1)		.892
Consider giving permission to have family member's organs donated at time of death?	45 (84.9)		7 (13.2)	42 (75.0)	4 (7.1)	9 (16.1)	19 (90.5)		2 (9.5)	.175

Note. * = $p \leq .05$

Table 32A

Factors Affecting Respondents' Personal Involvement in Organ Donation and Transplantation: Health Region

	Responses (N = 135)															
	Grande Prairie (N = 30)					Fort MacMurray (N = 15)					Red Deer (N = 35)					
Personal Involvement Statements	V	SW	NV	N	DK	V	SW	NV	N	DK	V	SW	NV	N	U	p
Strongly do you support donation	17	11	2			9	5			1	13	20	1			.112
Comfortable identifying donor?	3	13	8	5	1	8	4	3			5	15	12	2	1	.055
Reluctance approaching families about donation?	1	15	6	4	4	3	6	2	2	2	3	16	12	3	1	.454
Likely not involved in donation because of time involved?	1	6	9	10	4			6	9		2	5	17	9	2	.315
Caring for brain dead patient, would family view conflict of interest if approached about donation?		11	10	6	3	1	5	7	1	1		9	12	9	5	.753
During brain death assessment, how appropriate to involve OPO in clinical issues?	16	8	1	3	2	9	3	1	1	1	17	5	5	1	7	.458
Aware of criteria that make patient candidate for donation?	2	12	10	5	1	1	5	6	3		1	7	15	10	2	.650
Procurement activities are emotionally demanding?	9	13	1		7	6	6	2		1	11	12	4		8	.039*
Favor providing payment to donor families?		2	8	18	2		1	1	13		1	5	9	19	1	.561

Note: V = Very; SW = Somewhat; NV = Not very; N = Not at all; DK = Don't Know
OPO = Organ Procurement Organization

Table 32B

Factors Affecting Respondents' Personal Involvement in Organ Donation and Transplantation: Health Region

	Responses (N = 135)										
	Lethbridge (N = 33)					Medicine Hat (N = 22)					
Personal Involvement Statements	V	SW	NV	N	DK	V	SW	NV	N	DK	p
Strongly do you support donation	16	11	4	1		15	7				.112
Comfortable identifying donor?	11	7	10	2	3	8	10	2	1	1	.055
Reluctance approaching families about donation?	5	14	7	6	1	3	7	8	4		.454
Likely not involved in donation because of time involved?	3	5	11	12	2		6	8	8		.315
Caring for brain dead patient, would family view conflict of interest if approached about donation?	2	8	12	9	2	1	8	4	7	2	.753
During brain death assessment, how appropriate to involve OPO in clinical issues?	18	5	4	4	2	9	8	1	3	1	.458
Aware of criteria that make patient candidate for donation?	5	10	10	7	1	2	11	5	2	1	.650
Procurement activities are emotionally demanding?	16	9	1		7	5	10	1	3	2	.039*
Favor providing payment to donor families?		1	6	23	3		1	5	12	3	.561

Note. V = Very; SW = Somewhat; NV = Not very; N = Not at all; DK = Don't Know

OPO = Organ Procurement Organization

* = $p \leq .05$

Table 33A

Factors Affecting Respondents' Personal Involvement in Organ Donation and Transplantation: Health Region

	Responses (%)									
	Grande Prairie (N = 30)			Fort MacMurray (N = 15)			Red Deer (N = 35)			
Personal Involvement Statements	Yes	No	Don't Know	Yes	No	Don't Know	Yes	No	Don't Know	p
Discussed your feelings about donation with your family?	25 (83.3)	5 (16.7)		10 (66.7)	5 (33.3)		28 (80.0)	7 (20.0)		.209
Consider donating your organs at time of your death?	25 (83.3)		5 (16.7)	13 (86.7)		2 (13.3)	32 (91.4)	2 (5.7)	1 (2.9)	.234
Have you signed an organ donor card?	21 (70.0)	9 (30.0)		9 (60.0)	6 (40.0)		23 (65.7)	12 (34.3)		.924
Consider giving permission to have family member's organs donated at time of death?	23 (76.7)		7 (23.3)	12 (80.0)		3 (20.0)	32 (91.4)		3 (8.6)	.034*

Note. * = $p \leq .05$

Table 33B

Factors Affecting Respondents' Personal Involvement in Organ Donation and Transplantation: Health Region

	Responses (%)						
	Lethbridge (N = 33)			Medicine Hat (N = 21)			
Personal Involvement Statements	Yes	No	Don't Know	Yes	No	Don't Know	p
Discussed your feelings about donation with your family?	31 (93.9)	2 (6.1)		17 (81.0)	4 (19.0)		.209
Consider donating your organs at time of your death?	28 (84.8)	3 (9.1)	2 (6.1)	20 (95.2)		1 (4.8)	.234
Have you signed an organ donor card?	20 (60.6)	12 (36.4)		15 (71.4)	6 (28.6)		.924
Consider giving permission to have family member's organs donated at time of death?	26 (78.8)	4 (12.1)	3 (9.1)	18 (85.7)		2 (9.5)	.034*

Note. * = $p \leq .05$

In order to elicit further information that would be helpful in understanding respondents' personal involvement in organ donation and transplantation, respondents were asked to comment on their prior experience in a short answer format. Only forty-eight of the total respondents provided a comment with thirty-seven comments from registered nurses, eight from physicians, and three from administrators (refer to Table 34 and Table 35).

Total respondent comments demonstrated that 11 of 48 respondents (22.9%) found participating in the organ procurement process "intense, time consuming, demanding or emotionally draining". Eight of 37 registered nurse respondents (21.6%) and 3 of 8 physician respondents (37.5%) found organ procurement "intense, time consuming, demanding or emotionally draining". Two ($n = 48$) registered nurses found that the procurement process was "frustrating, lengthy and a waste", as well inappropriate clinical management had rendered the organs "useless". Eight percent ($n = 48$) of the total respondents indicated that organ donation is very stressful for the family, while 8.1% ($n = 37$) of registered nurse respondents and 12.5% ($n = 8$) of physician respondents believed organ donation was very stressful for the family. Eight percent of the total respondents ($n = 48$) found the organ procurement team professional and supportive. Five percent ($n = 37$) of registered nurses, 12.5% ($n = 1$) of physicians, and 33.3% ($n = 3$) of administrators found organ procurement teams professional and supportive to staff and donor families. Only one registered nurse ($n = 37$) indicated her experience had been negative due to the transplant team and transplant coordinator treating the donor disrespectfully. In general, 29% ($n = 48$) of the total respondents found organ donation and caring for transplant recipients rewarding. Thirty percent of registered nurses

($\underline{n} = 37$), 12.5% ($\underline{n} = 8$) of physicians, and 66.7% ($\underline{n} = 3$) of administrators stated the organ donation experience was “rewarding, interesting, and a touching experience”.

Table 34

Total Respondents' Statements Of Personal Experiences in Donation &/or Caring For Transplant Recipients

Statements on personal experiences in donation and transplantation	Responses	
	Frequency	(%)
Never involved.	6	12.5
Intense, time consuming, demanding, emotional experience.	11	22.9
Stressful experience for the family.	4	8.3
Frustrating, lengthy, waste of time.	2	4.2
Inappropriate clinical management of the donor.	2	4.2
Difficult to approach the family when no prior relationship has been established.	3	6.3
System constraints precluding ease with which the process may/can occur.	1	2.1
Disrespect to the donor by the transplant team.	1	2.1
Professionalism exhibited by the transplant team towards the donor family and staff.	4	8.3
Rewarding experience.	14	29.2

Table 35

Registered Nurses, Physicians, and Administrators Statements of Personal Experiences in Donation &/or Caring For Transplant Recipients

Item	Responses					
	Nurses <u>N</u> = 37	Percent (%)	Physicians <u>N</u> = 8	Percent (%)	Administrators <u>N</u> = 3	Percent (%)
Never involved.	6	16.2				
Intense, time consuming, demanding, emotional experience.	8	21.6	3	37.5		
Stressful experience for the family.	3	8.1	1	12.5		
Frustrating, lengthy, waste of time.	2	5.4				
Inappropriate clinical management of the donor.	2	5.4				
Difficulty approaching the family when no prior relationship established.	1	2.7	2	25.0		
System constraints precluding ease with which the process may/can occur.	1	2.7				
Disrespect to the donor by the transplant team.	1	2.7				
Professionalism exhibited by the transplant team towards the donor family and staff.	2	5.4	1	12.5	1	66.7
Rewarding experience.	11	29.7	1	12.5	2	33.3

Resources For Organ Donation and Transplantation

Respondents' perception of resources for organ donation and transplantation was obtained by requesting subjects answer 6 items of the questionnaire using a agree/disagree/unsure scale and 1 open ended question to solicit additional information on compensation for involvement in the organ donation process (refer to Table 36 and Table 37). Inservicing by a transplant team member on organ donation and transplantation a minimum of once a year was strongly supported by all respondents at 83.5% ($\underline{n} = 135$). Eighty-eight percent ($\underline{n} = 97$) of registered nurses and 100% ($\underline{n} = 5$) of hospital administrators agreed that inservicing by a transplant team member on organ donation and transplantation should occur a minimum of once a year, while only 65.6% ($\underline{n} = 32$) of physicians agreed ($\chi^2 = 10.42$, $p = .034$).

Thirty-nine of the total respondents (29.1%) agreed that adequate funding was allocated to support a ventilator-dependent patient for brain death evaluation. Among health care professionals, 4 of 5 administrators (80%) thought adequate funding was allocated to support ventilator-dependent patients for brain death evaluation while only 29 of 97 registered nurses (29.9%) and 6 of 32 physicians (18.8%) agreed ($\chi^2 = 10.25$, $p = .036$).

Fifty-six percent of all respondents ($\underline{n} = 135$) were uncertain if professionals in their institutions were adequately compensated for participating in the organ donation process. Amongst the health care professionals, 61.9% of registered nurses ($\underline{n} = 97$) were uncertain, 50% ($\underline{n} = 32$) of physicians disagreed, and 40% of administrators ($\underline{n} = 5$) agreed that professionals in their institutions were adequately compensated for participating in the organ donation process ($\chi^2 = 10.26$, $p = .036$).

Sixty of the total respondents (45.1%) agreed that a specialist should be hired in each non-transplant center to help facilitate the donation process. Forty-nine of 97 registered nurses (50.5%) agreed that a specialist should be hired in each non-transplant center to help facilitate the donation process, however, physician and administrator respondents were equally divided between disagreement and uncertainty. Thirty-four percent of physicians ($\underline{n} = 32$) disagreed and 34.4% ($\underline{n} = 32$) were unsure whether a specialist should be hired in each non-transplant center to help facilitate the donation process. Forty percent of administrators ($\underline{n} = 5$) disagreed that a specialist is required in each non-transplant center to help facilitate the donation process, while 40% of administrators ($\underline{n} = 5$) were uncertain.

Table 36

Total Respondents' Perceptions of Resources For Organ Donation and Transplantation

Resource Statements	Responses (%)			<u>N</u>
	Agree	Disagree	Unsure	
Inservicing by a transplant team on donation and transplantation should occur minimum yearly?	111 (83.5)	9 (6.8)	13 (9.8)	135
Adequate funding is allocated to support ventilator-dependent patients evaluated for brain death.	39 (29.1)	38 (28.4)	57 (42.5)	135
Professionals in my institution are adequately compensated for participating in donation process.	13 (9.7)	46 (34.1)	75 (56.0)	135
Funding is designated towards supporting donation process.	20 (15.0)	29 (21.8)	84 (63.2)	135
A specialist should be hired in each non-transplant center to help facilitate donation process?	60 (45.1)	42 (31.6)	31 (23.3)	135
Funding for an additional ICU bed should be established specifically for care of a brain dead patient.	28 (21.2)	60 (45.5)	44 (33.3)	135

Note. ICU = Intensive Care Unit

Table 37

Nurses, Physicians and Administrators Perceptions of Resources For Organ Donation and Transplantation

	Responses (%)									
	Registered Nurses (N = 97)			Physicians (N = 32)			Administrators (N = 5)			
Resource Statements	Agree	Disagree	Unsure	Agree	Disagree	Unsure	Agree	Disagree	Unsure	p
Inservicing by transplant team on donation and transplantation should occur minimum yearly?	85 (87.6)	4 (4.1)	7 (7.2)	21 (65.6)	5 (15.6)	6 (18.8)	5 (100.0)			.034*
Adequate funding is allocated to support ventilator-dependent patients evaluated for brain death.	29 (29.9)	24 (24.7)	44 (45.4)	6 (18.8)	13 (40.6)	13 (40.6)	4 (80.0)	1 (20.0)		.036*
Professionals in my institution are adequately compensated for participating in donation process.	8 (8.2)	29 (29.9)	60 (61.9)	3 (9.4)	16 (50.0)	13 (40.6)	2 (40.0)	1 (20.0)	1 (20.0)	.036*
Funding is designated towards supporting donation process.	16 (16.5)	17 (17.5)	64 (66.0)	4 (12.5)	10 (31.3)	18 (56.3)		2 (40.0)	2 (40.0)	.294
A specialist should be hired in each non-transplant center to help facilitate donation process?	49 (50.5)	29 (29.9)	18 (18.6)	10 (31.3)	11 (34.4)	11 (34.4)	1 (20.0)	2 (40.0)	2 (40.0)	.185
Funding for an additional ICU bed should be established specifically for care of a brain dead patient.	23 (23.7)	39 (40.2)	34 (35.1)	4 (12.5)	17 (53.1)	10 (31.3)	1 (20.0)	4 (80.0)		.234

Note. ICU = Intensive Care Unit

* = $p \leq .05$

Chi-square analysis was performed to determine whether factors such as age, years of experience, practice area, and health regions affect respondents' perceptions of resources for organ donation and transplantation (refer to Table 38 to 41B). More than 75% of respondents in all three age categories (26-39 years $n = 62$, 40-53 years $n = 66$, 54-67 years $n = 4$) and years of experience (1-14 years $n = 56$, 15-29 years $n = 70$, 30-44 years $n = 7$) agreed that inservicing by a transplant team on organ donation and transplantation should occur a minimum of once per year. Greater than 55% of respondents from the first two age categories (26-39 years $n = 62$, 40-53 years $n = 66$) and years of experience (1-14 years $n = 56$, 15-29 years $n = 70$) were unsure if professionals in their institutions were adequately compensated for participating in the donation process. Seventy-five percent ($n = 4$) of respondents in the last age category (54-67 years $n = 4$) and 71.4% ($n = 7$) of respondents in the last category of years of experience (30-44 years $n = 7$) agreed that professionals in their institutions were adequately compensated for participating in the organ donation process. Statistically significant differences were not observed among respondents' age and years of experience.

The majority of respondents (> 62%) in the first two age categories (26-39 years $n = 62$, 40-53 years $n = 66$) and years of experience (1-14 years $n = 56$, 15-29 years $n = 70$) were uncertain if adequate funding was designated towards supporting the organ donation process, while greater than 50% of respondents in the last age category (54-67 years $n = 4$) and years of experience (30-44 years $n = 7$) believed that adequate funding has not been designated towards supporting the organ donation process. More than 40%

of respondents from the first two age categories (26-39 years $\underline{n} = 62$, 40-53 years $\underline{n} = 66$) and all three categories of years of experience (1-14 years $\underline{n} = 56$, 15-29 years $\underline{n} = 70$, 30-44 years $\underline{n} = 7$) agreed that a specialist should be hired in each non-transplant center to help facilitate the organ donation process. Fifty percent of respondents in the third age category (54-67 years $\underline{n} = 4$) disagreed that a specialist should be hired in each non-transplant center to help facilitate the organ donation process.

Respondents in the three categories of years of experience differed significantly in that 25% ($\underline{n} = 56$) of respondents with 1-14 years of experience and 28.6% ($\underline{n} = 70$) of respondents with 15-29 years of experience disagreed that adequate funding has been allocated to support ventilator-dependent patients evaluated for brain death, while a larger proportion of respondents with 30-44 years of experience at 57.1% ($\underline{n} = 7$) disagreed ($\chi^2 = 10.14$, $p = .038$).

Inservicing by a transplant team on organ donation and transplantation a minimum of once per year was highly supported by the first two practice areas, with 81% agreement from the Emergency department ($\underline{n} = 52$), and 93% from ICU/CCU ($\underline{n} = 55$). Only 67% from Family Practice/Internal Medicine ($\underline{n} = 21$) agreed that inservicing on organ donation and transplantation a minimum of once per year was necessary ($\chi^2 = 10.86$, $p = .028$).

Inservicing by a transplant team on organ donation and transplantation a minimum of once per year was universally supported by all five health regions, with 83.3% agreement by Grande Prairie ($\underline{n} = 30$), 86.7% agreement by Fort MacMurray ($\underline{n} = 15$), 82.9% agreement by Red Deer, 72.7% agreement by Lethbridge, and 95.2% agreement by Medicine Hat respondents. Health regions differed significantly in that

12.1% ($n = 33$) of respondents from Lethbridge and 28.6% ($n = 35$) of respondents from Red Deer disagreed that professionals in their institutions were adequately compensated for participating in the organ donation process. A higher proportion of respondents from the remaining three health regions disagreed that professionals in their institutions were adequately compensated for participating in the organ donation process with 43.3% ($n = 30$) disagreement from Grande Prairie, 53.3% ($n = 15$) disagreement from Fort MacMurray, and 52.4% ($n = 21$) disagreement from Medicine Hat ($\chi^2 = 19.28$, $p = .013$). The majority of respondents from all five health regions (Grande Prairie 53%, Fort MacMurray 73%, Red Deer 74%, Lethbridge 64%, and Medicine Hat 48%) were uncertain if funding was specifically designated towards supporting the donation process.

Table 38

Factors Affecting Respondents' Perceptions of Resources For Organ Donation and Transplantation: Age

	Responses (%)									
	26 – 39 years (N = 62)			40 – 53 years (N = 66)			54 – 67 years (N = 4)			
Resource Statements	Agree	Disagree	Unsure	Agree	Disagree	Unsure	Agree	Disagree	Unsure	p
Inservicing by transplant team on donation and transplantation should occur minimum yearly?	54 (87.1)	3 (4.8)	5 (8.1)	53 (80.3)	6 (9.1)	6 (9.1)	3 (75.0)		1 (25.0)	.643
Adequate funding is allocated to support ventilator-dependent patients evaluated for brain death.	11 (17.7)	20 (32.3)	31 (51.6)	26 (39.4)	17 (25.8)	23 (34.8)	2 (50.0)	1 (25.0)	1 (25.0)	.085
Professionals in my institution are adequately compensated for participating in donation process.	5 (8.1)	23 (37.1)	34 (54.8)	7 (10.6)	20 (30.3)	39 (59.1)	1 (25.0)	3 (75.0)		.208
Funding is designated towards supporting donation process.	11 (17.7)	13 (21.0)	39 (62.9)	7 (10.6)	14 (21.2)	44 (66.7)	1 (25.0)	2 (50.0)	1 (25.0)	.414
A specialist should be hired in each non-transplant center to help facilitate donation process?	32 (51.6)	17 (27.4)	13 (21.0)	26 (39.4)	23 (34.8)	17 (25.8)	1 (25.0)	2 (50.0)	1 (25.0)	.605
Funding for an additional ICU bed should be established specifically for care of a brain dead patient.	18 (29.0)	23 (37.1)	22 (35.5)	10 (15.2)	35 (53.0)	19 (28.8)		2 (50.0)	2 (50.0)	.177

Note. ICU = Intensive Care Unit

Table 39

Factors Affecting Respondents' Perceptions of Resources For Organ Donation and Transplantation: Years Of Experience

	Responses (%)									
	1 – 14 years (<u>N</u> = 56)			15 – 29 years (<u>N</u> = 70)			30 – 44 years (<u>N</u> = 7)			
Resource Statements	Agree	Disagree	Unsure	Agree	Disagree	Unsure	Agree	Disagree	Unsure	p
Inservicing by transplant team on donation and transplantation should occur minimum yearly?	47 (83.9)	3 (5.4)	6 (10.7)	57 (81.4)	6 (8.6)	6 (8.6)	6 (85.7)		1 (14.3)	.862
Adequate funding is allocated to support ventilator-dependent patients evaluated for brain death.	11 (19.6)	14 (25.0)	31 (55.4)	26 (37.1)	20 (28.6)	24 (34.3)	2 (28.6)	4 (57.1)	1 (14.3)	.038*
Professionals in my institution are adequately compensated for participating in donation process.	3 (5.4)	21 (37.5)	32 (57.1)	9 (12.9)	20 (28.6)	41 (58.6)	1 (14.3)	5 (71.4)	1 (14.3)	.097
Funding is designated towards supporting donation process.	9 (16.1)	12 (21.4)	36 (64.3)	9 (12.9)	13 (18.6)	47 (67.1)	2 (28.6)	4 (57.1)	1 (14.3)	.082
A specialist should be hired in each non-transplant center to help facilitate donation process?	28 (50.0)	16 (28.6)	12 (21.4)	28 (40.0)	25 (35.7)	17 (24.3)	4 (57.1)	1 (14.3)	2 (28.6)	.676
Funding for an additional ICU bed should be established specifically for care of a brain dead patient.	17 (30.4)	22 (39.3)	17 (30.4)	9 (12.9)	35 (50.0)	25 (35.7)	2 (28.6)	3 (42.9)	2 (28.6)	.212

Note. ICU = Intensive Care Unit

* = $p \leq .05$

Table 40

Factors Affecting Respondents' Perceptions of Resources For Organ Donation and Transplantation: Practice Area

	Responses (%)									
	Emergency (N = 52)			ICU/CCU (N = 55)			Other (N = 21)			
Resource Statements	Agree	Disagree	Unsure	Agree	Disagree	Unsure	Agree	Disagree	Unsure	p
Inservicing by transplant team on donation and transplantation should occur minimum yearly?	42 (80.8)	6 (11.5)	4 (7.7)	51 (92.7)	1 (1.8)	3 (5.5)	14 (66.7)	2 (9.5)	5 (23.8)	.028*
Adequate funding is allocated to support ventilator-dependent patients evaluated for brain death.	12 (23.1)	14 (26.9)	26 (50.0)	19 (34.5)	15 (27.3)	22 (40.0)	5 (23.8)	8 (38.1)	8 (38.1)	.568
Professionals in my institution are adequately compensated for participating in donation process.	1 (1.9)	19 (36.5)	32 (61.5)	8 (14.5)	17 (30.9)	31 (56.4)	3 (14.3)	9 (42.9)	9 (42.9)	.147
Funding is designated towards supporting donation process.	7 (13.5)	11 (21.2)	35 (67.3)	10 (18.2)	12 (21.8)	34 (61.8)	1 (4.8)	6 (28.6)	13 (61.9)	.643
A specialist should be hired in each non-transplant center to help facilitate donation process?	23 (44.2)	13 (25.0)	17 (32.7)	28 (50.9)	18 (32.7)	9 (16.4)	8 (38.1)	8 (38.1)	5 (23.8)	.338
Funding for an additional ICU bed should be established specifically for care of a brain dead patient.	15 (28.8)	20 (38.5)	17 (32.7)	11 (20.0)	26 (47.3)	18 (32.7)	2 (9.5)	11 (52.4)	8 (38.1)	.452

Note. ICU = Intensive Care Unit

* = $p \leq .05$

Table 41A

Factors Affecting Respondents' Perceptions of Resources For Organ Donation and Transplantation: Health Region

	Responses (%)									
	Grande Prairie (N = 30)			Fort MacMurray (N = 15)			Red Deer (N = 35)			
Resource Statements	Agree	Disagree	Unsure	Agree	Disagree	Unsure	Agree	Disagree	Unsure	p
Inservicing by a transplant team on donation and transplantation should occur minimum once a year?	25 (83.3)	2 (6.7)	3 (10.0)	13 (86.7)	1 (6.7)	1 (6.7)	29 (82.9)	2 (5.7)	4 (11.4)	.802
Adequate funding is allocated to support ventilator-dependent patients evaluated for brain death.	4 (13.3)	13 (43.3)	13 (43.3)	7 (46.7)	4 (26.7)	4 (26.7)	8 (22.9)	7 (20.0)	20 (57.1)	.065
Professionals in my institution are adequately compensated for participating in donation process.	2 (6.7)	13 (43.3)	15 (50.0)	1 (6.7)	8 (53.3)	6 (40.0)	1 (2.9)	10 (28.6)	24 (68.6)	.013*
Funding is designated towards supporting the donation process.	5 (16.7)	9 (30.0)	16 (53.3)	1 (6.7)	3 (20.0)	11 (73.3)	5 (14.3)	3 (8.6)	26 (74.3)	.405
A specialist should be hired in each non-transplant center to help facilitate the donation process?	10 (33.3)	13 (43.3)	7 (23.3)	4 (26.7)	8 (53.3)	3 (20.0)	19 (54.3)	7 (20.0)	7 (20.0)	.065
Funding for an additional ICU bed should be established specifically for the care of a brain dead patient.	6 (20.0)	14 (46.7)	10 (33.3)	4 (26.7)	7 (46.7)	4 (26.7)	7 (20.0)	16 (45.7)	11 (31.4)	.984

Note. ICU = Intensive Care Unit

* = $p \leq .05$

Table 41B

Factors Affecting Respondents' Perceptions of Resources For Organ Donation and Transplantation: Health Region

	Responses (%)						
	Lethbridge (N = 33)			Medicine Hat (N = 21)			p
Resource Statements	Agree	Disagree	Unsure	Agree	Disagree	Unsure	
Inservicing by a transplant team on donation and transplantation should occur minimum once a year?	24 (72.7)	3 (9.1)	5 (15.2)	20 (95.2)	1 (4.8)		.802
Adequate funding is allocated to support ventilator-dependent patients evaluated for brain death.	13 (39.4)	6 (18.2)	14 (42.4)	7 (33.3)	8 (38.1)	6 (28.6)	.065
Professionals in my institution are adequately compensated for participating in donation process.	6 (18.2)	4 (12.1)	23 (69.7)	3 (14.3)	11 (52.4)	7 (33.3)	.013*
Funding is designated towards supporting the donation process.	5 (15.2)	7 (21.2)	21 (63.6)	4 (19.0)	7 (33.3)	10 (47.6)	.405
A specialist should be hired in each non-transplant center to help facilitate the donation process?	12 (36.4)	10 (30.3)	11 (33.3)	15 (71.4)	4 (19.0)	3 (14.3)	.065
Funding for an additional ICU bed should be established specifically for the care of a brain dead patient.	6 (18.2)	12 (36.4)	13 (39.4)	5 (23.8)	11 (52.4)	6 (28.6)	.984

Note. ICU = Intensive Care Unit

* = $p \leq .05$

Lastly, respondents were asked how the hospital and health care professionals should be compensated for their involvement in the organ donation process. Of the 135 questionnaires returned, 80 (59.3%) health care professionals provided suggestions or statements regarding compensation for professionals involved in the donation process. Of those health care professionals, 33% believed that no compensation should be provided when involved in the donation process. All three health care professional respondents indicated that the care of a potential organ donor should be altruistically motivated. Amongst the health care professionals, 36 of 59 registered nurse respondents (61%), 7 of 18 physician respondents (38.9%), and 1 of the 3 administrator respondents (33.3%) indicated compensation should not be provided when involved with organ donation and the family of a donor. Sixteen percent of the total respondents suggested health care professionals be provided with extra monetary contribution, whether it be in the form of a fee code for family counseling/time spent managing the donor, a set fee for the physician directly involved in clinical decisions, or extra funding directed towards a professional fund. Nineteen percent of registered nurses suggested health care professionals receive further funding for time spent managing the donor or counseling the family, as well as a set fee established for the physician directly involved with donor care. Fifty percent ($n = 18$) of physician respondents indicated they should receive further monetary compensation for the time involved in clinical management of the donor or for counseling of the family, whether organ donation ensues or not. Of those 18 physicians, 16.7% indicated a set fee should be established for the care of a potential organ donor.

Five percent of the total respondents indicated the importance of receiving acknowledgment through letters from the OPO for the intense care the donor received in

their institution. Also, feedback, in the form of follow-up information on the organs/transplant recipients, was cited as important; in order for those involved in the donation process know the successes or failures of the organs recovered. Lastly, a letter of appreciation towards those professionals directly involved in the care of the donor and family was shown to be important, primarily by registered nurses (3.4%).

When asked on which topics respondents would like educational programs to assist them with the care of the donor/transplant recipients, ten topics were identified (refer to Table 42). In order of frequency, the topics included: (1) identifying appropriate donors, (2) care of potential donors, (3) discussion of brain death, (4) legal implications, (5) how to approach the family to request organ donation, (6) common concerns of donor families, (7) care of transplant recipients, (8) importance of organ donation, and, (9) discussing own feelings about organ donation. Greater than 62% of total respondents circled the first 7 topics as recommendations for educational programs. More than 60% of registered nurses ($n = 98$), physicians ($n = 32$) and administrators ($n = 5$) circled the top three topics as important for educational programs (refer to Table 43). These topics included identifying appropriate donors, care of potential donors and discussion of brain death. Sixty-seven of 98 (68.4%) registered nurse respondents and 3 of 5 (60%) administrator respondents circled they would like an educational program on how to approach a family to request organ donation, while only 15 of 35 (46.9%) physician respondents circled this topic for educational purposes. The educational topic addressing common concerns of donor families was circled by 72.4% ($n = 98$) of registered nurse respondents, while only 31.3% ($n = 32$) of physician respondents and 40% ($n = 5$) of administrator respondents circled this topic.

Table 42

Total Respondents' Recommendations for Educational Programs on Donation &/or Caring For Transplant Recipients

	Responses		
Recommendations for Educational Programs	Agree	%	<u>N</u>
Identifying appropriate donors	109	80.7	135
Care of potential donors	107	79.3	135
Discussion of brain death	107	79.3	135
Legal Implications	93	68.9	135
How to approach the family to request organ donation	85	63.0	135
Common concerns of donor families	83	61.5	135
Care of transplant recipients	64	47.4	135
Importance of organ donation	41	30.4	135
Discussing my own feelings about organ donation	32	23.7	135

Table 43

Registered Nurse, Physician, and Administrator Recommendations for Educational Programs on Donation &/or Caring For Transplant Recipients

Item	Nurses <u>N</u> = 98	Percent (%)	Physicians <u>N</u> = 32	Percent (%)	Administrators <u>N</u> = 5	Percent (%)
Identifying appropriate donors	82	83.7	23	71.9	4	80.0
Care of potential donors	85	86.7	19	59.4	3	60.0
Discussion of brain death	80	81.6	22	68.8	5	100.0
Legal Implications	77	78.6	13	40.6	3	60.0
How to approach the family to request organ donation	67	68.4	15	46.9	3	60.0
Common concerns of donor families	71	72.4	10	31.3	2	40.0
Care of transplant recipients	50	51.0	12	37.5	2	40.0
Importance of organ donation	33	33.7	5	15.6	3	60.0
Discussing my own feelings about organ donation	26	26.5	4	12.5	2	40.0

CHAPTER FIVE

Discussion of Findings

This purpose of this study was to describe critical care health professionals' knowledge and attitudes towards organ donation and transplantation in five non-transplant centers in Alberta. Several factors were explored which included: (1) knowledge of health professionals in non-transplant centers in Alberta of the incident and success rates of organ transplantation; (2) knowledge of health professionals in non-transplant centers in Alberta regarding clinical criteria of brain death and donor criteria; (3) attitudes of health professionals in non-transplant centers in Alberta towards organ donation and transplantation; (4) perceived barriers of health professionals in non-transplant centers in Alberta in the process of organ donation; and, (5) the relationship between characteristics of health professionals in non-transplant centers in Alberta and their knowledge, attitudes, and perceived barriers towards organ donation and transplantation.

Data were obtained from the 'Organ Donation and Transplantation: A Survey of Critical Care Health Professionals' questionnaire (Molzahn, 1996), which consisted of open-ended and fixed-format questions. Section I included 16 items relating to knowledge of organ donation and transplantation. Section II included 24 items relating to attitudes toward organ donation and transplantation. Section III contained 19 items plus 4 items from section V relating to personal involvement towards organ donation and transplantation. Section IV included 6 items relating to resources towards organ donation and transplantation with an open-ended question relating to professional compensation. Lastly, section V contained 8 items relating to demographic information.

A total of 336 questionnaires were mailed to 211 registered nurses, 109 physicians and 16 hospital administrators. Of the 336 surveys mailed, 135 respondents (40.2%) returned their questionnaires (registered nurses = 46.4%, physicians = 29.4%, hospital administrators = 31.3%). Of the 135 respondents, 98 were registered nurses (72.6%), 32 were physicians (23.7%) and 5 were hospital administrators (3.7%). The majority of registered nurses were female, between 40 and 53 years of age, diploma prepared, with 15 to 29 years of clinical practice. This is consistent with the fact that nursing remains largely a female profession with a majority remaining diploma prepared. Despite baccalaureate entry to practice, these demographic characteristics reflect an aging nursing population reaching middle years of age and considerable clinical experience. Characteristics of hospital administrators paralleled registered nurses in gender, age and clinical experience. Education preparation was divided between diploma and baccalaureate level. These administrators had advanced to administrative responsibilities within their institutions. Physician respondents, however, reflect a male predominance, 26 to 39 years of age, with 1 to 14 years of clinical experience and a postgraduate education. These characteristics reflect that physicians in non-transplant centers remain predominantly younger males with fewer years in clinical practice and a higher level of education compared to registered nurses. Primary practice area for each health care professional demonstrated that registered nurse respondents worked predominantly in the ICU/CCU, while hospital administrators worked predominantly in a supervisory capacity or hospital administration. Physician respondents rotated equally between Emergency and Family Practice/Internal Medicine.

Factors Influencing Organ Donation and Transplantation

Knowledge of Organ Donation and Transplantation

Knowledge of organ donation and transplantation was inconsistent among health care professionals. The majority of respondents agreed that clinical guidelines declaring brain death were well established and that donors were brain dead patients maintained on ventilators. However, most administrators and some registered nurses and physicians thought that organ recovery followed cardiac asystole. In a study by Ettner (1988), 30% of respondents agreed or were uncertain whether organ procurement followed asystole. This lack of knowledge reflects that a significant number of hospital administrators, and to a lesser degree, registered nurses and physicians, are unfamiliar with the organ recovery process. Equally, more than half of registered nurse respondents were not very aware of the criterion that makes a patient a candidate for organ donation while more than half of physician and administrator respondents believed they were aware. Physicians, in the decision-making role, consistently are better informed about organ donor criteria than other health care professionals (Youngner et al., 1989).

There was high agreement among the three health care professionals that donor families do not incur financial costs in the process of donation and that it is illegal for a living person to sell a kidney, whether age, years of experience, clinical practice area or health region were assessed. Respondents seemed least knowledgeable about whether some religions prohibit donation. Significant differences were seen among the health care professionals, with 22% of registered nurse respondents and 53% of physician respondents disagreeing, while 60% of administrator respondents were uncertain. Physicians were least likely to believe that religions prohibit donation. In a study by

Molzhan (1996), only 14.3% of registered nurses disagreed when asked whether religions prohibit donation. In fact, most religions support organ donation. Jehovah's Witness and the Jewish faiths traditionally have not supported donation, however allow the process with some stipulations (Peters, 1986). The belief held among respondents that many religions prohibit organ donation reflects a serious lack of knowledge regarding the religious beliefs of our community members, and may seriously underscore the needs, or desires, of potential donor families. Misperceptions about religious beliefs rob potential donor families of the opportunity to receive some comfort through the donation experience (Stiller & Abbott, 1994).

In relation to hospital policies and protocols, more than half of the registered nurses and hospital administrators were aware their hospital had written policies on organ donation, while a large proportion of physicians were uncertain. These findings show a lack of knowledge about transplant policies and procedure among physicians, which can result in a lack of confidence in donation, subsequently deterring organ donor identification and recovery (Ettner et al., 1988). Respondents 26 to 39 years of age with less than 15 years of experience and practicing in Family Practice/Internal Medicine appeared to be uncertain of their hospitals' policies on organ donation, which may reflect fewer experiences in organ procurement. Family Practice/Internal Medicine professionals will not have had the same encounters to potential organ donation situations as compared to the Emergency or ICU/CCU physicians and nurses due to the nature of the clinical areas and types of patients seen.

In relation to knowledge of current transplant facts, the majority of health care professionals did not have an accurate concept of the scope or impact of transplantation

regardless of age, years of experience, practice area or health region. In a study done by McGough and Chopek (1990), 49% of respondents agreed that heart and liver transplant are increasingly successful and worth performing. Evanisko and colleagues (1998), in a study of critical care physicians and nurses in 28 hospitals in the United States, found that only 45.1% of respondents were aware of the 1-year graft survival following kidney transplant. In the present study, fewer respondents accurately identified actuarial survival following heart or liver transplant, while a larger proportion of respondents (51.5%) correctly identified the one year actuarial survival following kidney transplant, which can be attributed to the length of experience garnered in the field of kidney transplantation, therefore increased professional exposure. Universally all areas showed reduced knowledge levels on actuarial survival and waiting lists, suggesting the need for improved education targeting critical care professionals (Ettner, 1988).

Attitudes Towards Organ Donation and Transplantation

Strong approval/support for cadaveric organ donation was demonstrated by all three health care professionals surveyed (98.5%), which is consistent with previous studies from Canada (Molzhan, 1997), the United States (Sophie et al., 1983; Prottas & Battens', 1988), and England (Watkinson, 1994). In this study, 66.2% of all respondents had signed an organ donor card, 88.1% would donate their organs at the time of their deaths, and 83.5% would donate a family member's organs at the time of their death. These findings are in keeping with a study of professional attitudes toward organ donation and transplantation done by Ettner and colleagues in the United States (1988). Despite this overwhelming support for organ donation, a persistent low rate of cadaveric organ recovery continues to exist.

In order to understand the continued poor organ recovery rates, concerns regarding donation were addressed. In this study, a large majority of registered nurses (76.5%) and administrators (100%) indicated brain death was a difficult concept to explain to families. Fifty-six percent of physicians found this to be a less burdensome responsibility. Similar results were found in a study of critical care health professionals across Canada where 73% of registered nurses and 47% of physicians found brain death difficult concept to explain to families (Molzhan, 1997). As well, a large proportion of respondents believed that donor medical protocols conflict with procedures for protecting transplantable organs and that organ recovery is time consuming. These aspects may hinder organ donation, causing health care professionals to become hesitant in donor identification, knowing the complexities they may face in the donation experience. However, despite these stated difficulties, a large majority of respondents strongly believed that organ donation helps families through the grieving process, and although the process of identifying a potential donor and conflicts experienced with clinical management directed towards protecting transplantable organs may be arduous, respondents believed the benefits for the family far outweighed these concerns (Prottas & Batten, 1988). Given the nature of these activities, any other findings would be surprising.

Respondents overwhelmingly believed that health institutions should actively participate in organ procurement, should have protocols to evaluate comatose, ventilator-dependant patients by brain death criteria, and should have protocols to evaluate brain dead patients for donation. These findings are consistent with the overwhelming support health care professionals have towards organ donation. The respondents were equally

strong in their belief that donor families should not receive payment for donation, nor should they receive tax credits or cash incentives if granting consent for organ donation. In a study by Molzhan (1996), the majority of respondents were opposed to all financial incentives for organ donation. Organ donation has always to date, (in industrialized nations), remained an altruistic gift, consent given freely by the family of a brain dead patient.

A large proportion of respondents believed that presumed consent should not be enacted into law. Presumed consent law requires formal registration if an individual does not wish to be an organ donor. Legislation has been enacted in a number of European countries with mixed results (Sutherland, 1997). Some countries have experienced an increase in organ donor rates (20 donors PMP), while other European countries have found rates less than 10 donors PMP. Removal of organs without the family's permission is largely not practiced due to physician resistance (Benoit, Spira, Nicoulet, & Moukarzel, 1990). In Canada, presumed consent has little support, with 77% of respondents (Sutherland, 1997) believing that organs should not be removed without family permission.

The majority of nurses and administrators were opposed to financial incentives or compensation for the identification/care of a potential organ donor, while a higher proportion of physician respondents, particularly older more experienced physicians, supported payment for donor or brain death evaluation. A large majority of registered nurses believed their professional responsibilities were not delineated between brain dead patients and other patients within their care, therefore no additional compensation should be provided. The differences seen among health care professional may be attributed to the

fact that physicians have traditionally received fee-for-service, while registered nurses are paid per shift. A minority of registered nurses indicated acknowledgement and feedback regarding donor organ/recipient outcomes would be satisfactory compensation.

Physicians, alternatively, believe inadequate compensation has been accorded within their institutions for their participation in the donation process. Physicians believed further funding is required whether in the form of a set fee or additional funding towards professional education. Perhaps with added resources towards donor and brain death evaluation fees, improved organ donation rates in non-transplant center may result, ultimately encouraging more active participation in donor identification.

It was apparent from this study that the majority of respondents (>60%), regardless of age, years of clinical experience, practice area, or health region, believed that education of health care professionals on organ donation and procurement was largely inadequate. Professional education was found to have the strongest influence on feelings about organ donation and transplantation (Kennedy et al., 1996). Respondents' confidence in his/her ability to ask about donation was strongly correlated to the number of times he/she approached a family about potential donation. Requesters, especially critical care professionals in non-transplant centers, may find this a daunting experience, particularly when organ donation is not a frequent occurrence (Skelley, 1985). Lack of training increases the discomfort health care professionals experience when faced with a potential brain dead patient and bereaved family (Wakeford & Stepney, 1989). Increased discomfort may lead the requestors to avoid the task entirely, robbing the potential donor family of the opportunity to make this gift and to make sense out of an otherwise senseless tragedy (McGough & Chopek, 1990).

Personal Involvement in Organ Donation and Transplantation

The complexities surrounding attitudes and beliefs in organ donation and transplantation creates a challenging situation, particularly when barriers hinder appropriate identification of a potential donor. Recognizing that barriers do exist encourages the examination of the rationale. When evaluating personal involvement in donation, one must look at those issues that preclude participation. In this study it was found that the majority of respondents were comfortable identifying a donor, particularly older health care professionals from the Emergency or ICU/CCU departments with greater number of years of clinical experience. However, a large majority of registered nurses and hospital administrators expressed reluctance approaching a family about donation, while a greater majority of physicians were not at all reluctant. Those respondents expressing reluctance were less than 54 years of age. Registered nurses and administrators experience uncertainty as to how to approach a grieving family, as well feel seeking consent for donation may heighten the family's suffering. The failure of health professionals to approach families for organ donation is often related to their fear of adding to the distress of an already devastated family (Hibbert, 1995). However, by not speaking with the family and failing to offer the option of donation, health care professionals deprive families of the opportunity to receive comfort through the donation (Stiller & Abbott, 1994). Families have reported increased stress when health professionals fail to identify, approach or discuss the possibility of organ donation (Pelletier, 1992). Health care professionals have also expressed that the lack of training in how to approach families for donation creates a sense of hesitancy, resulting in an unwillingness to broach the subject with a family. Effective request processes include

clear communication of brain death (Evanisko et al., 1998), utilization of decoupling (discussion of donation following family's acceptance of death) and clear delineation of hospital staff roles (Gortmaker et al., 1998). Wakeford and Stepney (1989) concluded that nurses particularly emphasized their unwillingness to confront relatives about organ donation due to inadequate professional training. Physicians, in their role as clinical decision makers, often have more confidence in undertaking this responsibility.

It was evident from this study that physicians still view themselves as the primary health care professional responsible for identifying and approaching a family for donation. Registered nurses, despite working in key clinical areas such as the Emergency Department and ICU/CCU, areas that experience potentially brain dead patients; continue to have difficulties recognizing or approaching families for donation. Whether this is due to lack of confidence in approaching families as a result of reduced knowledge of brain death (Sophie et al., 1983), donor criteria (Bidigare & Oermann, 1991), or lack of training in request process (Wakeford & Stepney, 1989), they are in key positions to facilitate organ donation. All health care professionals must view organ donation as a collaborative process rather than the role of any particular professional group (Molzhan, 1996).

When further evaluating barriers to organ donation it was found that a large proportion of respondents, particularly physicians and administrators, did not like becoming involved in declaring brain death. Registered nurses did not experience the same trepidation; however, this may be attributed to the fact they are ultimately not responsible for the clinical decision of brain death. A large proportion of respondents rarely referred brain dead patients to an organ procurement agency despite having cared

for patients that had died from head trauma, CVA, or drowning. Fifty percent of physicians had approached up to nine families for consent for donation in the past year, while only 18% of registered nurses had approached families for donation. The majority of respondents had not been involved with any organ donors in the past year, despite having cared for a number of patients with life threatening head injuries, or have not been involved in the care of transplant recipients. Prior experience with donation and transplantation is known to impact donation rates, as positive attitudes amongst health care professionals can influence family's decision regarding consent for organ donation (Youngner et al., 1989).

There was general agreement among respondents that organ procurement places heavy emotional demands on all health care professionals. Few immediate rewards are experienced while many potential sources of stress exist for nurses and physicians who participate in the care of an organ donor, particularly in non-transplant centers where this remains an infrequent occurrence for the benefit of an anonymous recipient. Kibberd (1992) found in a study of ICU nurses, that the aggressive care required maintaining donor organs limited their time and efforts to comfort the devastated family, which ultimately added to their stress. Further studies showed that the lack of personnel necessary to provide the intense care required (Hickey & Lewandowski, 1988); the time and energy directed towards the care of the donor (Vernale, 1991), coupled with the fear of making an error in clinical judgment (Sophie et al., 1983) all heightened the emotional experience felt by all health care professionals. Furthermore, a small proportion of respondents expressed frustration over the length of time with which the process takes, potentially harming organ viability. One respondent indicated the transplant team had

behaved disrespectfully towards the donor by treating him as a body part versus as an individual. In a study by Wakeford and Stepney (1989), 15% of respondents found donor identification was reduced due to negative experiences with transplant teams. As critical care professionals involved in the donation process we must be cognizant of our professional behavior in order to maintain a relationship with health institutions, particularly with those that do not experience organ donation and transplantation on a large scale (Borozny, 1990). However, despite the identified concerns and heavy emotional investment, all three health care professionals indicated they would become actively involved in organ donation and provide the necessary emotional support, as it ultimately resulted in a very rewarding experience. As well, it was suggested that streamlined procedures be developed in order to ease the difficulties and frustrations experienced by non-transplant center personnel.

Resources for Organ Donation and Transplantation

Canadian organ donor rates remain consistently below other countries such as the United States and Spain. Part of the reason may be attributed to the fact that Canadian hospitals receive no financial incentive to identify or maintain organ donors (Colpitts, 1997). Hospitals, particularly non-transplant centers, are required to absorb all costs associated with the maintenance and retrieval process. As well, lack of adequate remuneration to physicians involved with the maintenance or declaration of organ donors has been cited as a barrier for 50% of physicians in non-transplant hospitals (Robinette, 1986). Provincial insurance plans, to date, have not adequately acknowledged the maintenance of a brain-dead patient for potential organ donation as a distinct procedure performed by physicians (Colpitts, 1997). The results of this study are consistent with

these findings in that 50% of physician respondents, particularly those respondents greater than 54 years of age with many years of clinical experience, believed they were not adequately compensated for their participation in the donation process.

Interestingly, 80% of hospital administrators believed adequate funding had been allocated to support ventilator-dependent patients evaluated for brain death, while only 30% of registered nurses and 19% of physicians agreed, while respondents with greater number of years of experience believed that adequate funding has not been allocated to support a ventilator-dependent patient evaluated for brain death. The majority of respondents in this study were uncertain whether adequate funding had been designated towards supporting the donation process. Financial disincentives to organ donation may deter health care professionals, particularly physicians, from taking on this complex and time consuming responsibility.

In the presence of non-transplant hospitals in Alberta, there are no committed individuals to assist with donor identification, management and organ donor awareness programs. In a study of 31 community (non-transplant) hospitals in Texas equipped with the facilities to manage organ donors, an in-house coordinator program was instituted whereby the coordinator liaised between critical care nurses, physicians and administrators. Where previously no donors had been produced, following the institution of this program, a 450% increase in the number of organ referrals occurred, with 312% increase in the number of organs recovered (Shafer, Durand, Hueneker, Wolff, Davis, Ehrle, Van Buren, Orlowski, Reyes, Gruenenfelder, & White, 1998). However, in the study of health care professionals in non-transplant centers in Alberta, it was found that 51% of registered nurse respondents believed that a specialist should be hired in each

non-transplant center to help facilitate the donation process while only 31% of physician respondents and 20% of administrator respondents agreed. Interestingly, 45% of respondents with less than 53 years of age, with 1 to 29 years of clinical experience in the Emergency department and/or the ICU/CCU from Red Deer and Medicine Hat agreed that a specialist should be hired within their institutions to facilitate the donation process.

Organ procurement agencies have increased their visibility through professional education in nursing and medical programs; however, it remains that continuous ongoing education is required, whether in university curriculums or within the hospital setting. A large proportion of respondents (83.5%) agreed that inservicing by a transplant team on donation and transplantation should occur a minimum of once per year. Providing educational programs involving donor families, living related donors, and recipients has been shown to increase awareness of the need for and demand of organs (DeYoung, 1991; Stoeckle, 1990). A comprehensive program should include (in order of importance as indicated by respondents) how to identify appropriate donors, care of potential donors, discussion of brain death, legal implications, how to approach a family to request organ donation, common concerns of donor families and the care of transplant recipients. It would seem that with increased education of critical care professionals on organ donation and transplantation and the development of an in-hospital coordinator program, donor potential in non-transplant centers could be actualized.

Limitations of the Study

Although attempts were made to maximize the response rate of health care professionals, there was a limited response rate. With so few administrator respondents and low response rate from physicians, the results are less generalizeable and may not

reflect the opinion of non-responders. A qualitative interview may have resulted in a higher response rate and more in-depth assessment of barriers that exist towards organ donation and transplantation. A second limitation was low internal consistency reliability for the knowledge, personal involvement, and resource subscales of the questionnaire, although total questionnaire reliability was acceptable. Finally, with self-report responses, the possibility does exist that respondents may provide socially acceptable responses.

Implications for Future Research

This research has implications for professional education, practice, research and policy makers. The study validates the importance of a comprehensive educational program preparing future health care professionals and updating current practitioners on facts, issues, and barriers surrounding organ donation and transplantation. Health care professionals in non-transplant centers show significant levels of support for organ donation, yet these centers yield few tangible results. Future research may include a replication of the study following the initiation of an annual in-service/workshop on organ donation and the development of an in-hospital coordinator program. With research, donor rates could be assessed, with increases supporting the premise that donor potential exists within non-transplant centers.

Recommendations

Based on the findings of this study, the following recommendations are suggested to increase critical care professionals' knowledge and participation in organ donation, recovery, and transplantation:

- 1) Development of an in-house coordinator program providing focused professional education to critical care personnel.

- 2) Annual workshops/in-services directed initially by a transplant team then performed regularly by an in-house coordinator, which includes topics such as: factual information about organ donation and transplantation, identification of appropriate donors, discussion of brain death, clinical management of potential donors, legal implications of organ donation, how to approach families for consent, common concerns of donor families, therapeutic benefits of organ donation for the grieving family, religious attitudes of the community towards organ donation and transplantation, and care of the transplant recipient.
- 3) Brain death criteria and donor identification protocols be kept in the ICU/CCU and Emergency Departments with easy access for all multidisciplinary health professional.
- 4) Specific hospital policies and procedures regarding organ donation be included in hospital/unit orientations. A clearly visible manual available with the referral number of the nearest organ procurement organization readily accessible. Critical care professionals should be encouraged to refer all patients of suspected organ donor eligibility regardless of concerns for deniability. Potentially appropriate donors may be incorrectly deemed unsuitable.
- 5) Health care professionals involved in the care of the donor and recovery of the organs receive follow-up information, and recognition for the time and effort expended in facilitating the process.
- 6) Health care professionals be provided with a post procurement debriefing session by the in-house coordinator.

Conclusions

The increasing need for organ donations parallels the growing need for public and professional education. A system must be developed that respects the altruistic nature of donation while supporting and encouraging it. Canadian citizens and health care professionals reject the notion of presumed consent, therefore one must continue with the current method of voluntarism. Historically, it has been presumed that poor donation rates were due to reduced knowledge levels and support of the public; however, findings of this study may indicate that health care professionals play a critical role in organ donation and transplantation. They have access to potential donors, are able to identify suitable candidates, and are in key positions to facilitate organ procurement. However, various factors have been identified that preclude the ease with which this process occurs. Health care professionals, although exhibiting strong approval and support for organ donation and transplantation, remain naively misinformed of key facts. Reduced knowledge levels on organ donation along with concerns and fears towards the procurement process are important predictors of professionals' personal involvement in organ donation and transplantation. Lastly, the role of the Canadian Health Care system cannot be underestimated. Government support may be seen in legislation of donor centers; however, provincial insurance plans must recognize the role that critical care practitioners play in the identification, maintenance and recovery of life saving organs. New and complex initiatives are not required to increase donor rates in non-transplant centers. Increasing the cooperation of critical care professionals through addressing the concerns that create barriers towards participation may improve donor rates. Clinical knowledge, or the lack thereof, and social/personal issues of difficulties approaching

grieving families can readily be supported through educational forums that assist with the daunting task of dealing with potential donor families. Organ procurement organizations can assist non-transplant centers by streamlining the procurement process, thereby reducing stressors experienced by smaller institutions. Responsibility lies in facilitating the donation for the benefit of the donor family and towards providing a life-giving therapy to the recipient.

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Appendix A

Cover Letter

January 29, 2002

Dear Health Care Professional,

I am conducting a study of knowledge and attitudes of critical care professionals regarding organ donation and transplantation in non-transplant centers in Alberta. An understanding of critical care professionals' perceptions remains an important one, as they are the frontline professionals involved in identifying potential organ donors. With this survey, concerns, barriers or difficulties when faced with a potential donor, may be identified. Your name was identified as working in either the emergency department and/or intensive care unit or as an administrator within your institution.

Please **do not** place your name on the questionnaire. Your responses are anonymous and confidential. You are under no obligation to answer the questionnaire and return of the questionnaire implies your consent to participate.

This questionnaire requires approximately 20 minutes of your time and should be returned in the enclosed self-addressed stamped envelope by February 25, 2002.

Your support in completing the questionnaire would be sincerely appreciated. Please feel free to contact me with any questions regarding the study.

Sincerely,

Susan M. Chernenko RN MN (c)
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University of Alberta
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Professor/Supervisor
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Appendix B

ORGAN DONATION AND TRANSPLANTATION: A SURVEY OF CRITICAL CARE HEALTH PROFESSIONALS

With your support in completing this survey, areas of improvement in organ donation and procurement may be identified. Research in this area can often initiate change in practice patterns.

Please read each question carefully.
Circle the response which you feel is the most appropriate.

Susan Chernenko RN, MN Candidate

Louise Jensen RN, PhD

Faculty of Nursing
University of Alberta

**THIS QUESTIONNAIRE CONTAINS 14 PAGES
PRINTED ON BOTH SIDES OF THE PAGES**

Organ Donation & Transplantation: A Survey of Critical Care Professionals

For each of the following items, please indicate your response by circling the letter that best reflects your viewpoint.

SECTION I

1. **The clinical guidelines for declaring a patient brain-dead are well established.**
 - A. Agree
 - B. Disagree
 - C. Unsure
2. **There are laws that recognize brain death as legal criteria for death.**
 - A. Agree
 - B. Disagree
 - C. Unsure
3. **Organ donors are generally patients who have suffered brain death and are being maintained on respirators.**
 - A. Agree
 - B. Disagree
 - C. Unsure
4. **Procurement of the heart, lungs, liver, or kidneys usually follows cardiac asystole.**
 - A. Agree
 - B. Disagree
 - C. Unsure
5. **Obtaining consent for organ donation is the legal responsibility of physicians.**
 - A. Agree
 - B. Disagree
 - C. Unsure
6. **Many religions prohibit organ donation.**
 - A. Agree
 - B. Disagree
 - C. Unsure

7. **The donor family may incur financial costs in the process of organ donation.**
 - A. Agree
 - B. Disagree
 - C. Unsure
8. **It is legal for a living person to sell a kidney.**
 - A. Agree
 - B. Disagree
 - C. Unsure
9. **Some patients with cancer are acceptable organ donors.**
 - A. Agree
 - B. Disagree
 - C. Unsure
10. **Health care institutions actively participate in organ procurement.**
 - A. Agree
 - B. Disagree
 - C. Unsure
11. **Health care institutions have established protocols which will ensure that comatose, ventilator-dependent patients be evaluated for brain death criteria.**
 - A. Agree
 - B. Disagree
 - C. Unsure
12. **Health care institutions have established protocols that will ensure all brain dead patients are evaluated for possible organ donation.**
 - A. Agree
 - B. Disagree
 - C. Unsure
13. **One year actuarial survival after a heart transplant is:**
 - A. ~ 65%
 - B. ~ 75%
 - C. ~ 85%

14. **Five year actuarial survival following a liver transplant is:**
- A. ~ 60%
 - B. ~ 70%
 - C. ~ 80%
15. **One year actuarial survival following a kidney transplant is:**
- A. ~ 70%
 - B. ~ 80%
 - C. ~ 90%
16. **Current waiting list for all patients waiting for an organ transplant in Canada is approximately:**
- A. 2500 patients
 - B. 3500 patients
 - C. 4500 patients

SECTION II

1. **Health care providers accept the established criteria for brain death.**
- A. Strongly agree
 - B. Agree
 - C. Disagree
 - D. Strongly disagree
 - E. Unsure
2. **Brain death is a difficult concept to explain to families of potential donors.**
- A. Strongly agree
 - B. Agree
 - C. Disagree
 - D. Strongly disagree
 - E. Unsure
3. **Organ procurement activities should be the responsibility of physicians.**
- A. Strongly agree
 - B. Agree
 - C. Disagree
 - D. Strongly disagree
 - E. Unsure

4. **The physician who certifies brain death of a patient should not be involved in the removal or transplantation of the organ(s).**
- A. Strongly agree
 - B. Agree
 - C. Disagree
 - D. Strongly disagree
 - E. Unsure
5. **Medical protocols for treating a patient who may become an organ donor often conflict with procedures for protecting organs that may be transplanted.**
- A. Strongly agree
 - B. Agree
 - C. Disagree
 - D. Strongly disagree
 - E. Unsure
6. **Organ donation helps families in their grieving process.**
- A. Strongly agree
 - B. Agree
 - C. Disagree
 - D. Strongly disagree
 - E. Unsure
7. **The general public in my community is well informed about organ donation.**
- A. Strongly agree
 - B. Agree
 - C. Disagree
 - D. Strongly disagree
 - E. Unsure
8. **The nearest organ procurement team is effective in educating health professionals regarding organ procurement needs and services.**
- A. Strongly agree
 - B. Agree
 - C. Disagree
 - D. Strongly disagree
 - E. Unsure

9. **Organ procurement teams treat the donor with respect.**
- A. Strongly agree
 - B. Agree
 - C. Disagree
 - D. Strongly disagree
 - E. Unsure
10. **In principle, I approve of organ donation.**
- A. Strongly agree
 - B. Agree
 - C. Disagree
 - D. Strongly disagree
 - E. Unsure
11. **The body of an organ donor may appear disfigured at the time of the funeral.**
- A. Strongly agree
 - B. Agree
 - C. Disagree
 - D. Strongly disagree
 - E. Unsure
12. **The family of the deceased patient should receive a payment for the donation.**
- A. Strongly agree
 - B. Agree
 - C. Disagree
 - D. Strongly disagree
 - E. Unsure
13. **Television and other communications media should be used routinely to remind the public about the need for organ donation.**
- A. Strongly agree
 - B. Agree
 - C. Disagree
 - D. Strongly disagree
 - E. Unsure

14. **A law should be passed that presumes consent for organ donation for all brain dead patients, unless they have previously indicated otherwise.**
- A. Strongly agree
 - B. Agree
 - C. Disagree
 - D. Strongly disagree
 - E. Unsure
15. **Brain death criteria should be passed as law.**
- A. Strongly agree
 - B. Agree
 - C. Disagree
 - D. Strongly disagree
 - E. Unsure
16. **Physicians should receive a donor evaluation fee for evaluating potential organ donors whether the donation takes place or not.**
- A. Strongly agree
 - B. Agree
 - C. Disagree
 - D. Strongly disagree
 - E. Unsure
17. **Physicians should receive an appropriate fee for making brain death evaluations.**
- A. Strongly agree
 - B. Agree
 - C. Disagree
 - D. Strongly disagree
 - E. Unsure
18. **Nursing staff (other than transplant coordinators) should receive extra financial compensation for participating in organ procurement activities.**
- A. Strongly agree
 - B. Agree
 - C. Disagree
 - D. Strongly disagree
 - E. Unsure

19. **Tax credits should be provided to families who have consented to organ donation of brain dead family members.**
- A. Strongly agree
 - B. Agree
 - C. Disagree
 - D. Strongly disagree
 - E. Unsure
20. **The government should provide cash incentives for families of brain dead potential donors who grant consent.**
- A. Strongly agree
 - B. Agree
 - C. Disagree
 - D. Strongly disagree
 - E. Unsure
21. **Health care institutions should actively participate in organ procurement.**
- A. Strongly agree
 - B. Agree
 - C. Disagree
 - D. Strongly disagree
 - E. Unsure
22. **Health care institutions should be required to establish protocols which will ensure that comatose, ventilator-dependent patients be evaluated by brain death criteria.**
- A. Strongly agree
 - B. Agree
 - C. Disagree
 - D. Strongly disagree
 - E. Unsure
23. **Health care institutions should be required to establish protocols that will ensure all brain dead patients are evaluated for possible organ donation.**
- A. Strongly agree
 - B. Agree
 - C. Disagree
 - D. Strongly disagree
 - E. Unsure

24. The organ donation process is very time consuming.

- A. Strongly agree
- B. Agree
- C. Disagree
- D. Strongly disagree
- E. Don't know

SECTION III

1. How strongly do you support organ donation?

- A. Very strongly
- B. Strongly
- C. Not very strongly
- D. Not at all strongly
- E. Don't know

2. How comfortable are you about identifying a patient as a potential donor while that patient is being maintained on a respirator?

- A. Very comfortable
- B. Somewhat comfortable
- C. Not very comfortable
- D. Not comfortable at all
- E. Don't know

3. Who should have the responsibility of explaining to a family that their relative is brain-dead?

- A. A neurosurgeon/neurologist
- B. The primary physician in the case
- C. The family physician
- D. The nurse who has been caring for the patient
- E. Other (specify) _____
- F. Don't know

4. **How reluctant are you to approach families about organ donation?**
 - A. Very reluctant
 - B. Somewhat reluctant
 - C. Not very reluctant
 - D. Not at all reluctant
 - E. Don't know
5. **How likely is it that you would not become involved in organ donation because of the time involved in the process?**
 - A. Very likely
 - B. Somewhat likely
 - C. Not very likely
 - D. Not at all likely
 - E. Don't know
6. **When caring for a brain dead patient, do you think the family would view it a conflict of interest if you approached them about organ donation?**
 - A. Very much of a conflict
 - B. Somewhat of a conflict
 - C. Not very much of a conflict
 - D. No conflict
 - E. Don't know
7. **While a patient is being assessed for brain death, how appropriate is it to involve organ procurement agency personnel (non-physicians) in decisions regarding management of hemodynamics and other clinical issues?**
 - A. Very appropriate
 - B. Somewhat appropriate
 - C. Not very appropriate
 - D. Not at all appropriate
 - E. Don't know
8. **In your experience, do you like to become involved in declaring brain death?**
 - A. Always
 - B. Often
 - C. Sometimes
 - D. Rarely
 - E. Definitely not
 - F. Don't know

9. **How aware are you of the criteria which make a terminally ill patient a possible candidate for organ donation?**
- A. Very aware
 - B. Somewhat aware
 - C. Not very aware
 - D. Not at all aware
 - E. Don't know
10. **In your experience, who most frequently first recognizes that a patient is or will become a potential organ donor?**
- A. Patient
 - B. Family of patient
 - C. Nurse
 - D. Physician
 - E. Chaplain
 - F. Other (Specify) _____
11. **In your experience, who most frequently first approaches the family of a potential donor?**
- A. Nurse
 - B. Physician
 - C. Social worker
 - D. Chaplain
 - E. Organ procurement agency representative
 - F. Other (Specify) _____
 - G. Don't know
12. **How frequently do you refer brain dead patients to an organ procurement department or agency?**
- A. Very frequently
 - B. Often
 - C. Sometimes
 - D. Rarely
 - E. Don't know

- 13. How emotionally demanding do you find organ procurement activities?**
- A. Very demanding
 - B. Somewhat demanding
 - C. Not very demanding
 - D. Not at all demanding
 - E. Don't know
- 14. How frequently do you express concern about your legal liability in the organ procurement process?**
- A. Very frequently
 - B. Often
 - C. Sometimes
 - D. Rarely
 - E. Don't know
- 15. How much in favor are you for providing some type of payment to donor families?**
- A. Very much in favor
 - B. Somewhat in favor
 - C. Somewhat opposed
 - D. Very much opposed
 - E. Don't know
- 16. Have you discussed your feelings about organ donation with your family?**
- A. Yes
 - B. No
- 17. Would you consider donating your organs at the time of your death?**
- A. Yes
 - B. No
 - C. Don't know
- 18. Have you signed an organ donor card?**
- A. Yes
 - B. No

19. **Would you consider giving permission to have a family member's organs donated at the time of death?**
- A. Yes
 - B. No
 - C. Don't know

SECTION IV

1. **Inservicing on organ donation and transplantation by a transplant team should occur a minimum of once a year?**
- A. Agree
 - B. Disagree
 - C. Unsure
2. **There is adequate funding allocated in my institution to support ventilator-dependent patients who are being evaluated for brain death.**
- A. Agree
 - B. Disagree
 - C. Unsure
3. **Health care professionals in my institution are adequately compensated for participating in the organ donation process.**
- A. Agree
 - B. Disagree
 - C. Unsure
4. **Funding is specifically designated towards supporting the organ donation process.**
- A. Agree
 - B. Disagree
 - C. Unsure
5. **A specialist (i.e. organ donor coordinator) should be hired in each non-transplant center to help facilitate the organ donation process?**
- A. Agree
 - B. Disagree
 - C. Unsure

6. **Funding for an additional intensive care unit bed within my institution should be established specifically for the care of a brain dead patient.**
- A. Agree
- B. Disagree
- C. Unsure
7. **How should the hospital and health care professionals be compensated for their involvement in the organ donation process?**

SECTION V

1. **Your present age?** _____ **years.**
2. **Your sex**
- A. Male
- B. Female
3. **How many years have you been practicing?** _____ **years.**
4. **What is your primary area of practice?**
- A. Emergency
- B. ICU/Critical Care
- C. Other (Specify) _____

5. **What is your highest degree obtained to date?**
- A. Diploma
 - B. Baccalaureate
 - C. Post Graduate
 - D. Masters
 - E. PhD
 - F. Other (Specify) _____
6. **What is the title of your present position?**
- A. Staff Practitioner
 - B. Administrator
 - C. Instructor/Educator
 - D. Other (Specify) _____
7. **Approximately how many beds are there in the hospital where you primarily practice?**
- _____ beds.
8. **Approximately how many ICU beds are there in this hospital?**
- _____ beds.
9. **In the last year, approximately how many patients did you care for who died of head trauma, cerebrovascular accident, drowning, or primary brain tumor?**
- A. 0
 - B. 1 to 4
 - C. 5 to 9
 - D. 10 to 14
 - E. 15 to 19
 - F. 20 to 30
 - G. More than 30

10. **In the last year, approximately how many transplant recipients did you care for?**
- A. 0
 - B. 1 to 4
 - C. 5 to 9
 - D. 10 to 14
 - E. 15 to 19
 - F. 20 to 30
 - G. More than 30
11. **Does your hospital have written policies on organ donation?**
- A. Yes
 - B. No
 - C. Don't know
12. **How many families have you approached for consent for organ donation in the past year?**
- A. 0
 - B. 1 to 4
 - C. 5 to 9
 - D. 10 to 14
 - E. 15 to 19
 - F. 20 to 30
 - G. More than 30
13. **How many organ donors were you involved with in the past year?**
- A. 0
 - B. 1 to 4
 - C. 5 to 9
 - D. 10 to 14
 - E. 15 to 19
 - F. 20 to 30
 - G. More than 30

14. If you have participated in organ donation or caring for transplant recipients, please comment on your personal experience.

This image shows a single sheet of white paper with horizontal blue ruling lines. The lines are evenly spaced and run across the width of the page. There is no handwriting or other markings on the paper.

15. On which topics would you like educational programs? (Check all that apply)

- A. Importance of organ donation
- B. Identifying appropriate donors
- C. Care of potential donors
- D. Discussion of brain death
- E. How to approach the family to request organ donation
- F. Discussing my own feelings about organ donation
- G. Common concerns of donor families
- H. Legal implications
- I. Care of transplant recipients
- J. None of the above
- K. Other (please list) _____

Do you have any other recommendations that might increase the supply of organs for transplantation (either within your institutions or in general)? Your recommendations would be appreciated in the space provided below.

[illegible]

Please mail your completed survey in the enclosed self-addressed envelope.

**Your participation in this study is
sincerely appreciated!**

Appendix C

Postcard reminder/Thank you postcard

February 15, 2002

Dear Health Care Professional,

Approximately two weeks ago you received a questionnaire inquiring about your opinions on organ donation and transplantation. Your opinions are of great importance as it allows for higher understanding of the beliefs of critical care professionals in non-transplant centers surrounding organ donation. Future strategies may be developed as a result of the findings found in this study.

Should the questionnaire have been completed, then please accept my sincere appreciation for your time and efforts in providing me with your insight and opinions. If you have not had the opportunity to complete the questionnaire, I would appreciate a few moments of your time to complete it. If the questionnaire was misplaced or lost, I would be pleased to send you another one.

Thank you again for your time and willingness to complete the questionnaire. On completion of the study, I would be happy to send a study summary upon request.

Sincerely,

Susan M. Chernenko RN MN (c)
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